DOCKETED	
Docket Number:	24-OPT-05
Project Title:	Corby Battery Energy Storage System Project
TN #:	271468
Document Title:	Corby Battery Energy Storage System Project Staff Assessment
Description:	N/A
Filer:	Marichka Haws
Organization:	California Energy Commission
Submitter Role:	Commission Staff
Submission Date:	7/15/2026 2:37:18 PM
Docketed Date:	7/15/2026

Corby Battery Energy Storage System Project

Staff Assessment

SCH #2025101073

July 2026
CEC-700-2026-029-SA

CALIFORNIA
ENERGY
COMMISSION
Gavin Newsom, Governor

DOCKET NUMBER 24-OPT-05

STAFF ASSESSMENT

Corby Battery Energy Storage System Project

(24-OPT-05)

Lead Agency

California Energy Commission

July 2026

Table of Contents

1 Executive Summary 1-1
2 Introduction 2-1
3 Project Description 3-1
4 Engineering Evaluation
4.1 Facility Design 4.1-1
4.2 Facility Reliability 4.2-1
4.3 Transmission System Engineering 4.3.1
4.4 Worker Safety and Fire Protection 4.4-1
5 Environmental Impact Assessment
5.1 Air Quality 5.1-1
5.2 Biological Resources 5.2-1
5.3 Climate Change and Greenhouse Gas Emissions 5.3-1
5.4 Cultural and Tribal Cultural Resources 5.4-1
5.5 Efficiency and Energy Resources 5.5-1
5.6 Geology, Paleontology, and Minerals 5.6.1
5.7 Hazards, Hazardous Materials/Waste, and Wildfire 5.7-1
5.8 Land Use and Agriculture 5.8-1
5.9 Noise and Vibration 5.9-1
5.10 Public Health 5.10-1
5.11 Socioeconomics 5.11-1
5.12 Solid Waste Management 5.12-1
5.13 Transmission Line Safety and Nuisance 5.13-1
5.14 Transportation 5.14-1
5.15 Visual Resources 5.15-1
5.16 Water Resources 5.16-1
6 Environmental Justice 6-1
7 Public Benefits 7-1
8 Alternatives 8-1
9 Compliance Conditions and Compliance Monitoring Plan 9-1
10 Mandatory Opt-In Requirements 10-1

11 Override Findings and Recommendations **11-1**

12 Authors and Reviewers **12-1**

Appendix A: Cumulative Scenario

Appendix B: Mailing List

Appendix C: Pacific Gas & Electric Company Construction Measures

Appendix D: Dispersion and Frequency Analysis

Section 1

Executive Summary

1 Executive Summary

Pursuant to California Code of Regulations, title 20, section 1879, the California Energy Commission (CEC) staff has prepared this Staff Assessment (SA), including a draft environmental impact report (EIR), to evaluate the potential environmental effects of the construction and operation of the Corby Battery Energy Storage System (BESS) Project (Corby BESS, Corby BESS Project, or project). This proceeding is designated as docket number 24-OPT-05. The SA has been prepared in compliance with the California Environmental Quality Act (CEQA), the CEQA Guidelines, the Warren-Alquist State Energy Resources Conservation and Development Act, and California Code of Regulations, title 20, chapter 5, article 4.1 (Opt-In Certification Program). The SA also evaluates whether the construction and operation of the project would be consistent with all applicable local, state, and federal laws, ordinances, regulations, and standards (LORS).

North Bay Interconnect, LLC and Corby Energy Storage, LLC (applicant), seek CEC certification[1] to construct, own, and operate the project. The project would be constructed on an approximately 40.3-acre parcel in Solano County, California. The project would include a 300-megawatt (MW), 1,200-megawatt-hour (MWh) BESS, associated project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, optional groundwater well, water tank, stormwater retention basins, storage containers, and a supervisory control and data acquisition (SCADA) system. These primary project components, along with a portion of the generation tie (gen-tie) line from the project site to the point of change of ownership (POCO), are within the CEC's Opt-In certification authority and are considered jurisdictional project components. The project would connect to the Pacific Gas and Electric Company (PG&E) Vaca-Dixon Substation, northwest of the project site and across Interstate (I) 80, via a 1.1-mile-long 230-kilovolt (kV) gen-tie line, portions of which would be installed overhead and underground.

The California Public Utilities Commission (CPUC) has exclusive jurisdiction over the siting, design, and construction of PG&E's interconnection facilities. PG&E would be responsible for the final approximately 0.2-mile segment of the new 230-kV gen-tie line interconnecting within the PG&E Vaca-Dixon Substation including the final five structures, the I-80 crossing, and the new Corby Bay. These project components are referred to as non-jurisdictional project components in this SA. Non-jurisdictional project components are analyzed in this CEQA document because, combined with the proposed project's BESS and related facilities, they constitute the whole project being evaluated under CEQA. However, the non-jurisdictional project components of the project occurring at the PG&E substation and infrastructure being constructed by PG&E

1 The terms certification, certificate, license, and permit are used interchangeably in applicable law and throughout this SA.

are not within the CEC's certification and not subject to future CEC oversight. More complete project details are set forth in **Section 3, Project Description**.

Based on the CEC staff's analysis in this document, CEC staff recommends the CEC issue a certification for the project with a statement of overriding considerations pursuant to sections 15091 and 15093 of the CEQA Guidelines regarding impacts to visual resources, as described in this SA at **Section 11, Override Findings and Recommendation**.

CEC staff's recommendations are based solely on the unique facts and circumstances in the record for this proceeding and are not intended to be generally applicable or applicable to pending or future applications for siting certifications made to the CEC. CEC staff will evaluate each new application on a case-by-case basis using all available information regarding each proposed project and add any new or additional data from available studies and analyses.

1.1 CEC Project Application Review History

This SA contains CEC staff's independent and objective evaluation of the proposed project and examines engineering, environmental, public health and safety, and environmental justice impacts of the proposed project, and consistency with additional statutory provisions, based on the information provided by the applicant, government agencies, interested parties, independent research, and other sources available at the time the SA was prepared.

On November 7, 2024, the CEC received an application for the (available in the project docket at https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05). Consistent with Public Resources Code section 25545.4, CEC staff reviewed the application materials within 30 days and on December 9, 2024, the CEC's Executive Director notified the applicant that the application was incomplete, identifying numerous specific informational deficiencies required under California Code of Regulations, title 20, section 1877. Over the following ten months, the applicant submitted the missing information. On October 17, 2025, CEC staff determined the supplemental information required to complete the application was acceptable and issued a Determination of Completeness signed by CEC's Executive Director.

With the application complete, pursuant to Public Resources Code sections 25545.7.2 and 25545.7.4, CEC staff issued a notice of preparation of an EIR on October 20, 2025, held an environmental scoping and public informational meeting in Vacaville, Solano County, on November 6, 2025, and notified the Native American Heritage Commission-listed California Native American tribes of the application and inviting consultation by letter on October 22, 2025.

1.2 Summary of Engineering Evaluation

Below is an overview of the engineering analysis of jurisdictional project components included in **Section 4, Engineering Evaluation**. Non-jurisdictional project components are not included in the analysis for this section since the engineering evaluation is not a CEQA topic and the non-jurisdictional project components are subject to CPUC oversight.

Facility Design. CEC staff concludes that the design and construction of the project, including the BESS facility and linear facilities, would conform with the applicable LORS related to facility design and engineering with implementation of CEC staff's proposed conditions of certification (COCs).

Facility Reliability. The project would be built to operate in a manner consistent with industry norms for reliable operation and would develop a maintenance program to ensure operational efficiency and reliability. The BESS would be expected to demonstrate a high availability factor consistent with industry norms of 95 percent or higher for a BESS facility, which is an acceptable level of availability.

Transmission System Engineering. The project would construct a substation and a 2,884-foot-long 500 kV generation tie line to connect to PG&E's existing Vaca-Dixon Substation. **Section 4.3, Transmission System Engineering**, summarizes detailed project impacts, system upgrades as mitigation measures, and the COCs required to interconnect the project into the California Independent System Operator's (California ISO's) grid. The Queue Cluster 9 Phase II Interconnection Study Report (Cluster 9 Report) found that the project's impacts on the transmission grid could be mitigated with upgrades suggested in the Cluster 9 Report. The mitigation measures mostly consist of the upgrades of the 500 kV and 230 kV breakers at PG&E's Tesla, Metcalf, and Vaca-Dixion substations to remedy overloading of the circuit breakers during short circuit faults. With implementation of CEC staff's proposed COCs, the project's impact on the transmission system would be less than significant and the project would comply with applicable LORS. Section 4.3 also identifies the project's benefits to electric system reliability.

Worker Safety and Fire Protection. CEC staff conducted a thorough investigation of the BESS units proposed for this project, the LG JF2 DC LINK 5.1 LFP batteries, and examined the required data from tests that measure the propensity for thermal runaway, fire, and propagation to occur. CEC staff also reviewed and evaluated the applicant's proposed compliance with Cal/OSHA worker safety and health regulations. Implementation of CEC staff's proposed COCs, along with the applicant's proposed engineering and administrative controls, would mitigate impacts associated with worker safety and fire protection and ensure compliance with worker safety and fire protection LORS. CEC staff's proposed COCs, which include a Construction Health and Safety Program, an Operations and Maintenance Health and Safety Program, a Construction Safety Supervisor, a Construction Safety Monitor, an on-site automatic external

defibrillator, provision of an onsite fire fighting water supply, and provision of specific hand-held toxic gas detectors and a toxic chemical detecting drone to the Dixon Fire Department, would mitigate worker safety risks. Additionally, the Emergency Action Plan and Emergency Response Plan required by section 761.3 of the Public Utilities Code would be prepared and implemented by the project owner. Fire protection impacts include the risk of potential fires at the BESS. CEC staff's proposed COCs, which include National Fire Protection Association 855 compliance, additional engineering controls, enhanced administrative controls (e.g., annual training, command and control procedures, reporting of any incidents, preparing a root-cause analysis), immediate notification requirements, and engineering design feedback from the Dixon Fire Department, would mitigate these risks. Additionally, the worker safety and fire protection impacts from the construction and operation of non-jurisdictional project components would be less than significant and no mitigation would be required.

1.3 Summary of Environmental Impact Assessment and Conditions of Certification

Below is an overview of the analysis included in **Section 5, Environmental Impact Assessment**. Impacts are categorized by the type of impact as follows:

- No Impact. The scenario in which no adverse changes to (or impacts on) the environment would be expected.
- Less Than Significant Impact. An impact that would not exceed the defined significance criteria or would be eliminated or reduced to a less than significant level through implementation of the applicant's project measures and/or compliance with existing federal, state, and local laws, ordinances, regulations, and standards.
- Less Than Significant with Mitigation Incorporated. An impact that would be reduced to a less than significant level through implementation of the identified mitigation requirements.
- Significant and Unavoidable Impact. An adverse effect that meets the significance criteria, but there appears to be no feasible mitigation available that would reduce the impact to a less than significant level. In some cases, mitigation may be available to lessen a given impact, but the residual effects of that impact would continue to be significant even after implementation of the mitigation measure(s).

Table 1-1 summarizes the environmental impacts and consequences of the project, including mitigation proposed.

TABLE 1-1 SUMMARY OF ENVIRONMENTAL IMPACTS AND LORS COMPLIANCE

Technical Area	Conforms with LORS?	Impacts Mitigated?
Air Quality	Yes	Yes
Biological Resources	Yes	Yes
Climate Change and Greenhouse Gas Emissions	Yes	Yes

TABLE 1-1 SUMMARY OF ENVIRONMENTAL IMPACTS AND LORS COMPLIANCE

Technical Area	Conforms with LORS?	Impacts Mitigated?
Cultural and Tribal Cultural Resources	Yes	Yes
Efficiency and Energy Resources	Yes	Yes
Geology, Paleontology and Minerals	Yes	Yes
Hazards, Hazardous Materials, and Wildfire	Yes	Yes
Land Use and Agriculture	No	Yes
Noise and Vibration	Yes	Yes
Public Health	Yes	Yes
Socioeconomics	Yes	Yes
Solid Waste Management	Yes	Yes
Transmission Line Safety and Nuisance	Yes	Yes
Transportation	Yes	Yes
Visual Resources	Yes	No
Water Resources	Yes	Yes

The COCs are proposed for jurisdictional project components, and the Mitigation Measures (MMs) are recommended for non-jurisdictional project components. Not all potentially significant impacts of the proposed project would be reduced to less than significant levels with COCs and MMs incorporated. While CEC staff concludes there is a significant and unavoidable impact to visual resources, staff also concludes there is substantial and compelling evidence in the record to support a CEC decision to approve the project by issuing a statement of overriding considerations (See **Section 11, Override Findings and Recommendations**).

The following summarizes CEC staff's conclusions.

Air Quality. *Less Than Significant with Mitigation Incorporated*. With the implementation of CEC staff's proposed COCs, the project would have a less than significant impact on air quality and would comply with applicable LORS. The COCs require the project owner to sufficiently reduce fugitive dust and other criteria pollutants from project construction and operation. CEC staff's proposed COCs **AQ-SC1** through **AQ-SC5** are effective and comprehensive for reducing air quality impacts during construction. CEC staff also recommends adopting COC **PH-1**, COC **PH-2** in **Section 5.10**, **Public Health**, COC **WORKER SAFETY-6**, COC **WORKER SAFETY-7**, COC **WORKER SAFETY-8**, and COC **WORKER SAFETY-10** in **Section 4.4**, **Worker Safety and Fire Protection,** and COC **HAZ-9** in **Section 5.7, Hazards, Hazardous Materials, and Wildfire**, to ensure potential air quality impacts during a BESS thermal runaway and fire event would be less than significant. Mitigation Measures **MM AQ-1** and **MM AQ-2** are recommended to reduce air quality impacts from non-jurisdictional project components to less than significant.

Biological Resources. *Less Than Significant with Mitigation Incorporated*. The construction and operation of the project has the potential to impact wildlife species

listed under the California Endangered Species Act (CESA), as well as other special-status species designated by the California Department of Fish and Wildlife (CDFW) and the United States Fish and Wildlife Service (USFWS).

Potentially affected species include, but are not limited to, Crotch's bumble bee (*Bombus crotchii;* state candidate for listing under CESA), burrowing owl (*Athene cunicularia hypugaea;* state species of special concern, candidate for listing under CESA), American badger (*Taxidea taxus*; state species of special concern), golden eagle (*Aquila chrysaetos*; Bald and Golden Eagle Protection Act (BGEPA), state fully protected), Swainson's hawk (*Buteo swainsoni*; state threatened), white-tailed kite (*Elanus leucurus*; state fully protected), and monarch butterfly (*Danaus plexippus*; federal candidate), as well as other native and migratory birds occurring within and adjacent to the project area. No special-status plant species are expected to occur within the project site based on habitat conditions and the applicant's survey data; therefore, no impacts to special-status plants are expected to occur. A portion of the gen-tie line would be installed beneath the Solano Irrigation District (SID) canal using horizontal directional drilling (HDD) to avoid direct disturbance to the canal's bed, bank, and channel. Because HDD carries the potential risk of inadvertent drilling fluid returns, CEC staff, in coordination with CDFW, recommended that the project owner submit a Lake and Streambed Alteration (LSA) notification as part of the application. CEC staff, in coordination with CDFW, reviewed the LSA notification and developed conditions of certification to address potential impacts.

With implementation of CEC staff's proposed COCs, impacts to special-status wildlife would be reduced to less than significant and would comply with applicable LORS. Implementation of the MMs proposed for the non-jurisdictional project components would reduce impacts to less than significant. The proposed COCs and MMs would include biological monitoring during construction activities, environmental training for all project personnel, applicable species-specific surveys and additional measures to avoid, minimize, and mitigate potential impacts to biological resources. CEC staff's recommended COCs also include compensatory mitigation for permanent loss of Swainson's hawk foraging habitat. In addition, with implementation of CEC staff's recommended COCs, including frac-out (unintentional release of drilling fluids) prevention and response procedures, potential impacts to the canal and associated aquatic resources would be avoided or minimized and reduced to less than significant.

Climate Change and Greenhouse Gas Emissions. *Less Than Significant.* The project would lead to a net reduction in greenhouse gas emissions across the State's electricity system. The greenhouse gas emissions related to the jurisdictional project components would not conflict with any applicable LORS adopted for the purpose of reducing the emissions of greenhouse gases. The project would have a less than significant greenhouse gas-related impact to the environment. Impacts associated with the non-jurisdictional project components would be less than significant.

Cultural and Tribal Cultural Resources. *Less Than Significant with Mitigation Incorporated*. There is one historical resource, the Kilkenny residence, that would be impacted by the project; however, with the screening for mitigation outlined in the COCs, the impact would be less than significant. There are no other recorded historical resources or tribal cultural resources that would be significantly impacted by the project. However, there is a possibility that undocumented archaeological resources might be discovered during construction and that such a discovery could be a historical resource or tribal cultural resource. With implementation of CEC staff's proposed COCs for jurisdictional project components and MMs for non-jurisdictional project components, the proposed project's impact on cultural and tribal cultural resources would be less than significant and would be consistent with applicable LORS. The COCs/MMs require implementation of a monitoring program involving appropriately qualified specialists who would observe and manage inadvertent discoveries of historical resources during construction, train the construction workforce in basic identification of historical resources, implement stop-work procedures (if required), screen the facility from the view of the Kilkenny residence, and report to the CEC on all activities. Additionally, if fulltime monitoring becomes necessary, it would include California Native American tribal monitors if the consulting tribes wish to participate.

Efficiency and Energy Resources. *Less Than Significant Impact*. Energy consumed by the project during construction and operation would not create significant adverse effects on energy supplies or resources, nor would it consume energy in a wasteful or inefficient manner. Furthermore, through energy-efficient design, the project would neither conflict with nor obstruct state or local LORS for renewable energy or energy efficiency and, therefore, would have no impact on those LORS.

Geology, Paleontology, and Minerals. *Less Than Significant with Mitigation Incorporated*. Potential impacts related to geologic hazards would be mitigated to less than significant through appropriate methods for project design, grading, and construction that are based on the results of a final site-specific geotechnical and geohazard investigation that conforms with the California Building Code (CBC), Solano County Code, Vacaville Municipal Code, other applicable LORS, and CEC staff's proposed COC. CEC staff's proposed COC requires the project owner to perform final geotechnical and geohazard investigations and incorporate that investigation's proposed mitigation into project design, grading, and construction. Compliance with CEC staff's proposed COC, Facility Design COCs, and Water Resources COCs, would mitigate potential impacts the project may have on geologic hazards to less than significant. Compliance with aforementioned COCs would also mitigate potential impacts from geologic hazards on the project to less than significant.

The project's ground disturbing activities would excavate Quaternary sedimentary deposits that have high paleontological sensitivities. Potential impacts to paleontological resources would be mitigated to less than significant through conformance with applicable LORS and implementation of CEC staff's proposed COCs. Paleontological

COCs require training, monitoring, and protection of paleontological resources that may be encountered during ground disturbing activities.

No known mineral resources or unique geologic features of commercial, scientific, and recreational value occur at the project site. The project would have no impacts on these resources.

Additionally, for impacts related to the construction and operation of non-jurisdictional project components, CEC staff recommends conformance with the CBC, Solano County Code, Vacaville Municipal Code, other applicable LORS, and compliance with CEC staff's recommended mitigation measures, which would keep those potential impacts less than significant.

Hazards, Hazardous Materials, and Wildfire. *Less Than Significant with Mitigation Incorporated*. The impacts associated with the routine transport, use, disposal or accidental release of hazardous materials/waste during construction and operation would be less than significant with the implementation of CEC staff's proposed COCs. Impacts related to unknown environmental contamination on the project site would be less than significant with the implementation of CEC staff's proposed COCs. Impacts related to schools and airports would be less than significant as no such facilities are within the project vicinity. The project would not substantially impair or interfere with emergency response or evacuation planning, emergency vehicle access, or personnel access to the project site. Access along the primary roadway leading to and from the project site would be maintained throughout construction and operation of the project to serve as the main ingress/egress for workers, emergency personnel, and potential evacuation, if needed. The project is in a Local Responsibility Area where there is local responsibility (Dixon Fire Protection District) for preventing and suppressing wildfires, rather than the responsibility of the state or federal government. The project site is not populated, adjacent areas are sparsely populated, and there are no nearby forested areas. With implementation of CEC staff's proposed COCs, potential wildfire impacts would be less than significant with mitigation.

The COCs require the following: a Hazard Materials Business Plan (HMBP) and Spill Prevention Control and Countermeasure Plan (SPCC); advance approval for changes in hazardous materials; hazardous waste generator identification numbers; site security plans for construction and operation; a Soils Management Plan; procedures for professional staffing, management, and actions in the case of suspected contaminated soil or groundwater; a soil and water quality sampling plan in case of a container fire at the BESS; annual vegetation management inspection reports documenting completion of vegetation management; and a Sampling and Analysis Plan (SAP) and Phase II Environmental Site Assessment to establish the background conditions of the potential level and extent of site contamination, including residual agrichemicals.

With implementation of CEC staff's proposed COCs, the jurisdictional project components would be in accordance with applicable LORS, and the project would have

less than significant impacts related to hazards, hazardous materials/waste and wildfire. Additionally, the hazards, hazardous materials/waste and wildfire impacts from the construction and operation of non-jurisdictional project components would be less than significant and no mitigation would be required.

Land Use and Agriculture. *Less Than Significant with Mitigation Incorporated*. CEC staff determined that the proposed project's conversion of Important Farmland to non-agricultural use, and the project's conflict with agricultural zoning, would be significant. With implementation of CEC staff's proposed COCs, the applicant would secure an agricultural easement that satisfies Solano County's Agricultural Mitigation Program requirements, thereby reducing impacts to Important Farmland and the zoning designations that protect Important Farmland to a less-than-significant level. CEC staff's proposed COCs would also ensure that construction and operation of the project would not preclude access to established land uses within the surrounding community. The project would not comply with County Ordinance No. ZT-25-02 prohibiting front-of-the-meter BESS within an Agricultural Zone. Under the CEC's authority set forth in Public Resources Code section 25545.1(b)(1), the issuance of a certificate by the CEC supersedes any applicable statute, ordinance, or regulation of any state, local or regional agency. Thus, certification of the project would authorize the construction and operations of the facility despite any inconsistency with local zoning. No mitigation measures are needed for non-jurisdictional project components.

Noise and Vibration. *Less Than Significant with Mitigation Incorporated*. With the implementation of CEC staff's proposed Noise COCs, the project's construction and operation would have a less than significant impact related to noise and vibration and would conform with applicable LORS. The Noise COCs require a public notification process, noise complaint process, restrictions on pile driving and other noisy construction activities, and an operational noise survey to verify project noise limits are met. The noise and vibration impacts from the construction and operation of the non-jurisdictional project components would be less than significant and would not require any MMs.

Public Health. *Less Than Significant with Mitigation Incorporated*. With the implementation of CEC staff's proposed COC **PH-1**, COC **PH-2**, COCs **AQ-SC3** through **AQ-SC5** in **Section 5.1, Air Quality**, COC **WORKER SAFETY-6**, COC **WORKER SAFETY-7**, COC **WORKER SAFETY-8**, COC **WORKER SAFETY-9**, and COC **WORKER SAFETY-10** in **Section 4.4, Worker Safety and Fire Protection,** and COC **HAZ-9** in **Section 5.7, Hazards, Hazardous Materials, and Wildfire**, the project would have a less than significant impact on public health and the jurisdictional project components would comply with applicable LORS. No MMs for non-jurisdictional project components are recommended for public health and impacts would be less than significant.

Socioeconomics. *Less Than Significant with Mitigation Incorporated*. Construction and operation of the project would not induce unplanned population growth in the region.

The regional labor force within a practical commuting distance of the project site is adequate to meet construction labor demands, and the project would require only a minimal number of permanent operations staff, resulting in no long-term housing demand. Temporary construction workers who elect not to commute would have access to sufficient short-term lodging accommodations in nearby communities, avoiding any displacement or strain on local housing resources. The project would have less than significant impacts related to population growth, and no impact on the displacement of people or housing.

Construction and operation of the project would result in less than significant impacts related to an increase in demand on public services. Although construction and operation activities would incrementally increase demand for fire protection and law enforcement, it would not necessitate the construction of new public service facilities or the expansion of existing services, and it would be consistent with applicable LORS. The project would not require new or expanded recreational facilities and would not place an increased demand on existing recreational uses in the surrounding region. With implementation of CEC staff's proposed COCs, the proposed project would be consistent with applicable LORS and would have a less than significant impact related to socioeconomics.

Solid Waste Management. *Less Than Significant with Mitigation Incorporated*. Solid waste produced during project construction and operation would be recycled to the extent possible or otherwise disposed of at certified local landfills with available capacity. This would be reinforced by implementation of the construction and operational waste management plans included in CEC staff's proposed COCs. Therefore, waste generated by the proposed project, including those sent to landfills, as well as materials handled by third party waste disposal resulting from construction and operation of the project, would have a less than significant impact and would conform with applicable LORS.

Transmission Line Safety and Nuisance. *Less Than Significant with Mitigation Incorporated.* With the implementation of CEC staff's proposed COCs, potential impacts associated with transmission lines and related structures and facilities for the project would have a less-than-significant impact related to transmission line safety and nuisance, and would conform with applicable LORS.

The proposed gen-tie line would be maintained according to the standard procedures of the American National Standard Institute/Institute of Electrical and Electronic Engineers guidelines for line safety and field management. The construction and operation of the project's new collector feeders, gen-tie line, on-site substation, and switchyard would not contribute to electromagnetic field (EMF) levels, corona, audible noise, or radio and television interference beyond acceptable standards. On-site worker or public exposure would be short-term and at levels expected for PG&E lines of similar design and current-carrying capacity. Implementing grounding and other field-reducing measures

in strict adherence to current utility standards and guidelines will further minimize the potential for nuisance shocks.

With CEC staff's proposed COCs, the safety and nuisance impact from the construction and operation of the proposed substation, switchyard, collector feeders, and the gen-tie line would be less than significant. Additionally, impacts from the utility switchyard and downstream network upgrades would be reduced to less than significant since these components are subject to permitting by the CPUC and Federal Aviation Administration regulations for structures 200 feet and above.

Transportation. *Less Than Significant with Mitigation Incorporated*. The project would have a less than significant impact related to transportation and with implementation of CEC staff's proposed COCs, the project would conform with applicable LORS. CEC staff's proposed COCs require: (1) preparation and implementation of a Construction Management Plan to cover traffic controls, emergency access, flaggers, detours or other mechanisms to allow for safe entry and exit of construction traffic and repair of roadway damage, (2) compliance with applicable limitations on vehicle sizes, weights, driver licensing and truck routes and (3) securing permits and licenses for transport of hazardous materials.

Visual Resources. *Significant and Unavoidable*. Project components would appear as a collection of geometric shapes and complex industrial forms that would exhibit considerable industrial character, which would contrast with the natural forms, lines, and textures of the existing rural, agricultural landscape character of the site and the surrounding agricultural lands. With the implementation of CEC staff's proposed COCs, the project's degradation of the existing visual character or quality of the public views of the site and its surroundings would be reduced but not to levels that would be less than significant. However, the project's glare and night lighting impacts would be reduced to levels that would be less than significant with effective implementation of COCs. COCs would require: (1) the application of structural surface treatments, (2) preparation of a vegetative landscape screening plan, and (3) preparation of an outdoor lighting control and management plan. CEC staff also concluded that, with implementation of COCs **VIS-1** through **VIS-3** and **MM VIS-1** and **MM VIS-2**, the proposed project would be consistent with the applicable state and local regulations and policies pertaining to the protection of scenic quality.

Water Resources. *Less Than Significant with Mitigation Incorporated*. The primary project water supply for both construction and operations would be either purchased water from SID or groundwater. The Solano subbasin groundwater sustainability agency oversees compliance for the groundwater basin under the Sustainable Groundwater Management Act. Impacts due to stormwater runoff would be mitigated by implementation of CEC staff's proposed COCs during construction and operation. Due to shallow groundwater, dewatering may be required and would be mitigated through implementation of CEC staff's proposed COC and waste discharge requirements administrated by the Central Valley Regional Water Quality Control Board. During

project construction and operation, sanitary wastewater needs would be addressed by portable toilets maintained by a local contractor. Additionally, impacts from non-jurisdictional project components would be less than significant with inclusion of PG&E's existing construction measures (**Appendix C** of this document), which include measures to manage stormwater pollution prevention during construction and operation.

1.4 Cumulative Scenario

See **Appendix A** of this document for a discussion on the CEC staff's methodology of assessing cumulative impacts and a list of existing and reasonably foreseeable projects CEC staff used to analyze cumulative impacts and a figure showing their location, where possible (see **Table A-1** and **Figure A-1** in **Appendix A**).

1.5 Alternatives to the Project

CEC staff evaluated three alternatives that were found to be potentially feasible and that could avoid or reduce the proposed project's potentially significant impacts:

- No Project Alternatives
- Lambie Industrial Park Alternative
- Central Overhead Gen-Tie Route Alternative

As described in **Section 8, Alternatives**, the No Project Alternative was determined by staff to have the least environmental effects but would not meet the basic objectives of the project. Overall impacts associated with construction and operation of the Lambie Industrial Park Alternative and the Central Overhead Gen-Tie Route Alternative would be of a similar level of severity as the impacts associated with the proposed project. Neither of the action alternatives would avoid or substantially lessen any of the project's significant effects. CEC staff has determined that given the detailed analysis of project-specific impacts presented in this Staff Assessment, and the conditions of certification and mitigation measures that have been tailored for the proposed project to reduce potential impacts to a less-than-significant level, the proposed project is the CEQA Environmentally Superior Alternative among the action alternatives.

1.6 Environmental Justice

The following technical areas discuss project-related impacts on environmental justice (EJ) populations: Air Quality; Cultural and Tribal Cultural Resources; Hazards, Hazardous Materials/Waste and Wildfire; Noise and Vibration; Public Health; Solid Waste Management; Transportation; Visual Resources; and Water Resources. As discussed in detail in **Section 6, Environmental Justice**, the project would not result in disproportionate impacts on the EJ populations presented in **Figures 6-1** and **6-2** and **Tables 6-2** and **6-3**.

1.7 Economic and Public Benefits

Public Resources Code section 25545.9(b) states there shall be a rebuttable presumption that the construction or operation of the facility will have an overall net positive economic benefit to the local government that would have had permitting authority over the site and related facility. In summary, the proposed project would contribute positive economic, environmental, and electric reliability public benefits to Solano County, including construction jobs, increased tax revenues, local spending in the community, contributions to renewable and zero-carbon electricity generation, and reliability improvements in the statewide grid. See **Section 7, Public Benefits**, for additional information on the economic, environmental, and electric reliability benefits of the project.

1.8 Areas of Known Controversy

Areas of known controversy/comment include: potential for fire/thermal runaway including associated impacts to sensitive receptors, agricultural land, and water resources; safety of BESS facilities; use of batteries manufactured by Contemporary Amperex Technology Company; potential conflicts with local land use designations; project location (proximity to homes, agricultural land, Interstate 80, and Travis Air Force Base); conversion of agricultural lands; visual impacts; cultural significance of Kilkenny House and Kilkenny Ranch; and potential impacts to biological resources.

1.9 Issues to Be Resolved

None.

1.10 References Cited

Cluster 9 Report – California ISO (TN 263002). App 8-E CA ISO Cluster 9 Phase II Interconnection Study Report, filed on May 1, 2025. *Confidential Report on File.*

Section 2

Introduction

2 Introduction

2.1 Energy Commission Jurisdiction and the Opt-In Certification Program

In 2022, Assembly Bill (AB) 205 established a new Opt-In Certification Program for eligible clean and renewable energy facilities to optionally seek certification through the California Energy Commission (CEC). Upon an applicant filing with the CEC, Public Resources Code sections 25545 and 25545.1 authorize the CEC to certify or approve the construction and operation of the following facilities:

- solar photovoltaic and terrestrial wind energy power plants of 50 megawatts (MW) or more
- energy storage facilities of 200 megawatt-hours (MWh) or more
- thermal power plants of 50 MW or more that do not burn, use, or rely on fossil or nuclear fuels
- the electric transmission lines from these generation and storage facilities to a point of junction with any interconnected electrical transmission system
- facilities that manufacture or assemble clean energy or storage technologies or their components with a capital investment of at least $250 million
- hydrogen production facilities (not derived from fossil fuel feedstock) and associated onsite storage and processing facilities
- geothermal power plants or projects that comprise multiple geothermal power plants on a single site.

Public Resources Code sections 25545 through 25545.13 authorize the CEC to accept applications for these facilities through June 30, 2030, and provide a streamlined process for their review and a decision by the CEC. The CEC is the "lead agency" (Pub. Resources Code, § 25545.7) under the California Environmental Quality Act (CEQA) and is required to prepare an environmental impact report (EIR), mitigated negative declaration, or negative declaration for any facility that elects to opt-in to the CEC's jurisdiction. With exceptions, including for the State Water Resources Control Board or applicable regional board, the issuance of a certificate by the CEC for an eligible facility is in lieu of any permit, certificate, or similar document required by any state, local, or regional agency, or federal agency to the extent permitted by federal law, and supersedes any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law (Pub. Resources Code, § 25545.1).

This Staff Assessment (SA) consists of a draft EIR following the requirements of CEQA (Pub. Resources Code, § 21000 et seq.), the CEQA Guidelines (Cal. Code Regs., tit. 14, div. 6, ch. 3), and separate discussions regarding the following statutory requirements:

(1) The extent to which the applicant has complied with the recommended minimum standards of efficiency adopted under Public Resources Code section 25402(d).

(2) The conformity of the facility with public safety standards and the applicable air and water quality standards, and with other applicable local, regional, state, and federal standards, ordinances, or laws.

(3) The potential for restoring the site as necessary to protect the environment if the CEC denies approval of the application.

(4) The public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits.

(5) An identification of whether the site is located at a prohibited area as identified in Public Resources Code sections 25526 and 25527 and any proposed findings relevant to that location.

(6) The rebuttable presumption that the construction or operation of the facility will have an overall net positive economic benefit to the local government. Economic benefits may include, but are not limited to, employment growth, housing development, infrastructure and environmental improvements, assistance to public schools and education, assistance to public safety agencies and departments, property taxes, and sales and use tax revenues. (Pub. Resources Code, § 25545.9)

(7) Any legally binding and enforceable agreements by the applicant with, or that benefit, a coalition of one or more community-based organizations, such as workforce development and training organizations, labor unions, social justice advocates, community foundations, local governmental entities, California Native American tribes, or other organizations that represent community interests, where there is mutual benefit to the parties to the agreement. Concurrent with the publication of the updated Staff Assessment, the executive director shall file a recommendation on whether the commission shall certify the environmental impact report and issue a certificate for construction and operation of the facility.

(8) For expedited judicial review, whether the project satisfies the conditions in Chapter 6.5 (commencing with Section 21178) of Division 13, including Sections 21183 and 21183.6, of the Public Resources Code.

2.2 Purpose of the Staff Assessment

The purpose of this SA is to provide objective information regarding the project's significant effects on the environment, identify possible ways to minimize the significant effects, describe reasonable alternatives to the project, assess the project's conformance with applicable local, state, and federal laws, ordinances, regulations, and standards (LORS), and provide an evaluation of the extent to which the application complies with additional licensing requirements set forth in the Public Resources Code. This information will be considered by the CEC Commissioners in deciding whether to grant a certificate to build and operate the project. The SA is based on information from the applicant, site visits, independent staff research, consultation with other agencies,

public comment, and relevant information received during public meetings, all of which are available through the docket as of the date of the publication of this document. Other state agencies retaining permit authority may also rely on information in this SA to inform their permitting or other approvals for this project.

The SA is circulated for agency and public review as follows: distribution through the CEQA State Clearinghouse to state agencies, direct mail to local, state and federal agencies, property owners and occupants adjacent to the project site and property owners within 1,000 feet of the project site and 500 feet of project linear facilities, posted to the project's CEC docket, and distributed via email to those on the project's subscription list. The subscription list is an automated CEC email notification system for persons who have subscribed to this proceeding.

Following the publication of the SA, Public Resources Code Section 25545.7.6 requires a 60-day public review and comment period on the SA, as well as a requirement for a public meeting no sooner than 30 days and no later than 60 days of publication of the SA. For projects staff is recommending approval, comments received during this period, and any changes to the SA, will be incorporated into an Updated Staff Assessment and presented to the CEC at a public business meeting. If the project is approved, a Notice of Determination is filed with the State Clearinghouse.

2.3 Jurisdictional and Non-Jurisdictional Project Components

The Corby Battery Energy Storage System (BESS) project proposes the construction and operation of a 300-megawatt (MW), 1,200-megawatt-hour (MWh) BESS, associated project substation, inverters, other ancillary facilities, and a portion of the generation tie (gen-tie) line from the project site to the point of change of ownership (POCO). These primary project components are within the CEC's Opt-In certification (i.e., licensing) authority and are considered jurisdictional project components. Staff has analyzed these project components as required by CEQA. As necessary, CEC staff has included conditions of certification (COCs) relevant to these components, to reduce significant effects on the environment to the extent feasible or ensure conformance with LORS, as part of possible CEC certification.

The California Public Utilities Commission (CPUC) has exclusive jurisdiction over the siting, design, and construction of Pacific Gas and Electric Company (PG&E's) interconnection facilities. PG&E would be responsible for the construction and operation of the portion of the gen-tie between the POCO and the point of interconnection (POI) at the existing PG&E Vaca-Dixon Substation, including the final five structures, the Interstate-80 crossing, and the new Corby Bay that are considered non-jurisdictional project components. Since they are part of the whole of the action for CEQA, CEC staff has analyzed the potential impacts of these non-jurisdictional project components and has recommended mitigation measures that can and should be adopted by the licensing authority, as necessary. The mitigation measures should be implemented by the CPUC.

2.4 Agency Coordination

CEC staff closely coordinates with other expert agencies to ensure the conditions those agencies would impose on the project if those agencies were issuing permits are incorporated into the CEC's certification.

To facilitate this coordination, staff provided notification of the receipt of the Opt-In application to California Department of Fish and Wildlife (CDFW), State Water Resources Control Board, Regional Water Quality Control Board (RWQCB), Department of Toxic Substances Control (DTSC) and other state, regional, and local agencies (such as Solano County, Solano Irrigation District, and Dixon Fire Department). Notification of the receipt of the Opt-In application was also provided to the CPUC and California Attorney General. Consistent with California Code of Regulations, Title 14, Section 15082 and Public Resources Code Chapter 6.2, Section 25545.7.2(a), on October 20, 2025, staff issued a Notice of Preparation of a Draft EIR, filing it with the project docket (TN 266663), Office of Land Use and Climate Innovation (formerly Office of Planning and Research) (State Clearinghouse), responsible and trustee agencies, and the county clerk.

The mailing list used to engage with stakeholder agencies can be found in **Appendix B**.

2.5 Consultation with Tribes

The CEC received a response from the Native American Heritage Commission (NAHC) to the CEC's request for an updated contact list and Sacred Lands File (SLF) search on October 31, 2024. The NAHC responded with negative results regarding the SLF and provided a list of California Native American tribes identified as having cultural affiliation in the project vicinity and interested in consulting on development projects in the project area. The CEC sent tribes an initial notification letter of receipt of an Opt-In application for the proposed project on November 15, 2024. Once the application was deemed complete, CEC staff sent letters to the California Native American tribes on October 22, 2025, consistent with the Public Resources Code, Chapter 6.2, Section 25545.7.4.

The following tribes were contacted:

- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Cortina Rancheria-Kletsel Dehe Band of Wintun Indians
- Grindstone Rancheria of Wintun-Wailaki
- Yocha Dehe Wintun Nation

Follow-up e-mails were sent on December 11, 2025, to the Cachil Dehe Band of Wintun Indians and the Yocha Dehe Wintun Nation. No e-mail addresses were provided for the Grindstone Rancheria of Wintun-Wailaki or the Cortina Rancheria-Kletsel Dehe Band of

Wintun Indians. Phone messages were left for the two tribes without e-mail addresses on December 12, 2025. To date, no responses have been received.

More detail on CEC staff's consultation efforts with California Native American tribes can be found in **Section 5.4, Cultural and Tribal Cultural Resources**.

2.6 Public Outreach and Notification

2.6.1 CEC's Office of the Public Advisor, Energy Equity, and Tribal Affairs (PAO+)

The CEC's public outreach program is primarily facilitated by the CEC's Office of the Public Advisor, Energy Equity, and Tribal Affairs (PAO+). The PAO+ outreach consisted of email and phone outreach to community organizations, churches, veteran organizations, businesses, child care and senior care facilities, youth organizations, schools, environmental organizations, and community centers. This is an ongoing process and efforts are discussed in greater detail in **Section 6, Environmental Justice**.

2.6.2 Newspaper Notice of Receipt of Opt-In Application

To initiate public awareness of the project, a Notice of Receipt of an Opt-In Application for the Corby BESS project was published in the Daily Republic, a newspaper of general circulation in Solano County on December 29, 2024. A copy of the proof of publication was filed to the project docket (TN 260897).

2.6.3 Notice of Preparation

As noted above, consistent with California Code of Regulations, Title 14, Section 15082 and Public Resources Code Chapter 6.2, Section 25545.7.2(a), on October 20, 2025, CEC staff mailed a Notice of Preparation of a Draft EIR to the trustee agency, Solano County Clerk, and local, regional, and federal agencies. The NOP was posted to the project docket (TN 266663), and was submitted to the Office of Land Use and Climate Innovation (formerly Office of Planning and Research) (State Clearinghouse).

2.6.4 Informational and Environmental Scoping Meeting

Consistent with Public Resources Code, Chapter 6.2, Section 25545.7.2, staff held an Informational and Environmental Scoping meeting on November 6, 2025, both in person at Ulatis Community Center in Vacaville, California and via remote access to solicit input on the application to identify the range of actions, alternatives, mitigation measures, and significant effects to be analyzed in depth in the Draft EIR (included as part of the SA). A copy of the meeting presentation (TN 267584) and meeting transcription (TN 268223) were filed to the project docket.

2.6.5 Notice of Availability of Draft EIR (included in SA)

As described above, CEC staff distributed a Notice of Availability (NOA) of the SA (including Draft EIR), consistent with the CEQA Guidelines (California Code of Regulations, title 14, section 15087). The SA is being circulated for review and comment by state agencies via the California State Clearinghouse and via direct mail to federal, regional and local agencies (including the county clerk), as well as organizations and individuals who have requested notification. Consistent with CEQA Guidelines section 15087, the NOA was mailed to owners and occupants contiguous to the project site and linears. The NOA was also mailed to property owners within 1,000 feet of the project site and 500 feet of the project linears, and to persons on the project subscription list. CEC staff also posted the NOA and the SA (that includes a Draft EIR) and associated application files and technical studies (with certain exceptions for confidential materials, e.g., known locations of sensitive cultural and/or biological resources) were posted to the project's docket for public review (https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05)

The relevant mailing lists staff used for outreach can be found in **Appendix B**.

2.6.6 Public Meeting for the Staff Assessment

CEC will host a public meeting on the Staff Assessment for the project, pursuant to Public Resources Code section 25545.7.6. The purpose of the meeting is for CEC staff to present the Staff Assessment, which includes a Draft EIR, and receive comments on the assessment from interested government agencies, California Native American Tribes, the public, and the project applicant. This meeting will be noticed and conducted as close as practicable to the proposed site, consistent with Public Resources Code, Chapter 6.2, Section 25545.7.6(a).

2.7 Organization of this Staff Assessment

The SA is prepared to conform to the requirements of CEQA, the CEQA Guidelines (California Code of Regulations, title 14, section 15000 et seq.), the Warren-Alquist Act (Public Resources Code, section 25000 et seq.), and CEC's siting regulations (California Code of Regulations, title 20, sections 1875-1881).

This Staff Assessment is organized into 12 sections, as described below.

- Section 1 Executive Summary. This section provides an overview of the proposed project; the environmental impacts that would result from the proposed project; conditions of certification identified to reduce or eliminate these impacts; project alternatives; net economic benefits to local government; areas of known controversy; and issues to be resolved.
- Section 2 Introduction. This section describes the CEC's authority and function of the SA; the environmental review process; and the organization of the SA.

- Section 3 Project Description. This section summarizes the proposed project, including the location of the site and project boundaries, characteristics of the proposed project, objectives sought by the proposed project, and intended use of this environmental document.
- Section 4 Engineering Evaluation. This section evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering LORS and any other special design requirements. CEC staff's engineering evaluation is broken down into the following topics:
  - Facility Design
  - Facility Reliability
  - Transmission System Engineering
  - Worker Safety and Fire Protection
- Section 5 Environmental Impact Assessment. This section includes the environmental setting (existing conditions); regulatory background; approach to analysis; project-specific and cumulative impacts (**Appendix A**); and mitigation measures (referred to as Conditions of Certification for jurisdictional project components), when required to reduce potentially significant impacts to less than significant and ensure conformance with LORS. Staff evaluates the potential environmental impacts that might reasonably be anticipated to result from construction and operation of the proposed project. CEC staff's analysis is broken down into the following environmental resource topics derived from CEQA Appendix G (Environmental Checklist):
  - Air Quality
  - Biological Resources
  - Climate Change and Greenhouse Gas Emissions
  - Cultural and Tribal Cultural Resources
  - Efficiency and Energy Resources
  - Geology, Paleontology, and Minerals
  - Hazards, Hazardous Materials/Waste, and Wildfire
  - Land Use and Agriculture
  - Noise and Vibration
  - Public Health
  - Socioeconomics
  - Solid Waste Management
  - Transmission Line Safety and Nuisance
  - Transportation
  - Visual Resources
    Water Resources
- Section 6 Environmental Justice. This section includes an analysis of how the project would potentially impact an Environmental Justice population[1].
- Section 7 Public Benefits. This section includes a discussion of any public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits.

1 Within this analysis, an environmental justice population of concern is identified when the minority population of the potentially affected area (i.e., Census tract) is greater than 50 percent when the percentage of low-income population of the potentially affected area (i.e., block group or Census tract) is equal to or greater than the low-income population of the greater geography (i.e., the County).

- Section 8 Alternatives. This section includes a discussion of a reasonable range of alternatives to the proposed project, or to the location of the project, which could feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project, and an evaluation of the comparative merits of the alternatives. This section also includes an evaluation of the no project alternative.
- Section 9 Compliance Conditions and Compliance Monitoring Plan (Compliance Plan). The Compliance Plan contains the means for ensuring all aspects of construction, operation and closure comply with LORS and with conditions/mitigations adopted by the CEC.
- Section 10 Mandatory Opt-In Requirements. This section includes a discussion of the project's conformance with the mandatory requirements for an Opt-In project.
- Section 11 Override Findings and Recommendation. This section includes a discussion of the project's significant and unavoidable impacts and its benefits.
- Section 12 Authors and Reviewers. This section includes a list of the authors and reviewers for this SA.

Section 3

Project Description

3 Project Description

North Bay Interconnect, LLC and Corby Energy Storage, LLC[1] (applicant), propose to construct, own, and operate the Corby Battery Energy Storage System (BESS) Project (Corby BESS or project). The project would be constructed on an approximately 40.3-acre parcel in Solano County, California. The project would include a 300-megawatt (MW), 1,200-megawatt-hour (MWh) battery energy storage system (BESS), associated project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, optional groundwater well, water tank, stormwater retention basins, storage containers, and a supervisory control and data acquisition (SCADA) system.

The project would connect to the Pacific Gas and Electric Company (PG&E) Vaca-Dixon Substation, northwest of the project site and across Interstate (I) 80, via a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line, portions of which would be installed overhead and underground. The underground portions of the gen-tie line would run east-west parallel to and crossing Kilkenny Road, either within acquired easements on adjacent parcels or within the City of Vacaville roadway right-of-way. The encroachment permits that normally would be required by the City of Vacaville would be subsumed by the CEC certification. The overhead portions would include two structures on the project site, four structures between Kilkenny Road and I-80 on private land owned by the applicant, and up to four structures north of I-80 on PG&E's Vaca-Dixon Substation property, for a total of up to 10 overhead gen-tie structures.

To accommodate the interconnection of the project and other future projects, PG&E is currently performing network upgrades which include grading, construction of concrete pads, and relocating existing structures within the Vaca-Dixon Substation. Specifically, for the project and within the previously graded area within the substation, PG&E would install a new 230-kV double bus bay structure (hereinafter "Corby Bay") with associated foundations and supports on approximately 0.6 acres kV connection. In addition, PG&E would construct, own, and operate the portion of the gen-tie between the point of change of ownership (POCO) and the new Corby Bay, including 5[2] of the 10 structures, to connect the project to the Vaca-Dixon Substation.

Non-Jurisdictional Project Components

The California Public Utilities Commission (CPUC) has exclusive jurisdiction over the siting, design, and construction of PG&E's interconnection facilities. PG&E would be

1 North Bay Interconnect, LLC and Corby Energy Storage, LLC are both wholly-owned subsidiaries of NextEra Energy Resources. North Bay Interconnect, LLC would own and operate the interconnection facilities for the project; and Corby Energy Storage, LLC would own and operate the BESS components of the project (TT 2026g).

2 Following construction, ownership of the POCO structure south of I-80 would be transferred from PG&E to the applicant, whereas the gen-tie line and structures between the POCO and Vaca-Dixon Substation would be owned and operated by PG&E (TT 2026g).

responsible for the portion of the gen-tie between the POCO and the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the new Corby Bay, identified as segments 6 to 10 on **Figure 3-3**, Project Layout.

PG&E's facilities are analyzed in this CEQA document because, combined with the proposed project's BESS and related facilities, they constitute the whole project being evaluated under CEQA. However, the components of the project occurring at the PG&E substation and infrastructure being constructed by PG&E are not within the CEC's certification and not subject to future CEC oversight. These aspects are covered by CPUC's regulatory framework. For this reason, the conditions of certification (COCs) identified in this SA are not applicable to PG&E's scope of work and when appropriate, the SA identifies mitigation measures separately for the project components outside of CEC's Opt-In Certification. Please refer to "Subsection 2.3, Jurisdictional and Non-Jurisdictional Project Components" of **Section 2, Introduction**, for additional details.

3.1 Project Title

Corby Battery Energy Storage System (BESS) Project

3.2 Lead Agency Name and Address

California Energy Commission
715 P Street
Sacramento, California 95814-5512

3.3 Lead Agency Contact Person and Phone Number

Renee Longman, Project Manager
Siting, Transmission and Environmental Protection Division
California Energy Commission
(916) 937-3538

3.4 Project Location and Existing Conditions

The applicant proposes to construct a BESS facility on one 40.3-acre parcel within unincorporated Solano County. The project would also construct a 1.1-mile-long 230-kV gen-tie line and fiber optic cable pathway that would cross up to six parcels.[3] Of the six parcels required for the project, three parcels are located within unincorporated Solano County, and three parcels are located within the City of Vacaville. Please refer to **Figure 3-1** Project Vicinity Map and **Figure 3-2** Project Site Location.

3 Underground Route Option #2, which places the east-west segment within the Kilkenny Road ROW, would bypass APN 0141-010-030 and therefore cross five parcels instead of six.

BESS Facility Location

The permanent operational facility, including the BESS array, project substation, associated equipment, roads, fencing, sound barrier, optional groundwater well, water tank, and drainage facilities, would be located on Assessor's Parcel Number (APN) 0141-030-090. The project parcel is bound on all sides by existing agricultural lands, with rural residences located to the north and west along Kilkenny and Byrnes Roads. The project site is located approximately 250 feet southeast of the City of Vacaville jurisdictional boundary, and approximately 5 miles northeast of the city center. I-80 is approximately 0.6 miles northwest of the project site. The nearest airports to the project site are Nut Tree Airport, located approximately 2.9 miles southwest of the project site and Travis Air Force Base located approximately 7.25 miles north of the project site.

Location of Interconnection Facilities

The energy would be transported from the project substation to the nearby PG&E Vaca-Dixon Substation through a 1.1-mile-long 230-kV gen-tie transmission line sited on an approximately 19.4-acre gen-tie corridor. The first section of the gen-tie corridor would begin at the northwest corner of the project site and would follow one of the following route options:

1. Underground Route Option #1 would be located within easements secured from private landowners (APNs 0141-030-080 and 0141-010-030) and Solano Irrigation District (SID). This east-west portion of the gen-tie would be underground, crossing Kilkenny Road and an SID canal before turning 90 degrees and running east-west parallel to the canal. The encroachment permit that normally would be required by the City of Vacaville for the Kilkenny Road crossing would be subsumed by the CEC certification (see **Section 5.8, Land Use and Agriculture**).
2. Underground Route Option #2 would be located within easements secured from the private landowner of the parcel immediately west of the project site (APN 0141-030-080). The encroachment permit from the City of Vacaville to install the gen-tie within the city-maintained Kilkenny Road right-of-way would be subsumed by the CEC certification (see **Section 5.8, Land Use and Agriculture**).

To the west of the initial east-west underground section (Option #1 or #2), the gen-tie corridor would run north-south up to I-80 with four overhead structures on two parcels that would be owned by the applicant (APNs 0133-060-010 and 0133-060-020). The overhead gen-tie line would continue northwest across I-80, requiring crossing agreements between PG&E and both SID and the California Department of Transportation (Caltrans) for irrigation canal and I-80 crossings, respectively. Up to four overhead structures and the new Corby Bay would be sited on PG&E's Vaca-Dixon Substation parcel (APN 0133-060-070). The gen-tie corridor and new Corby Bay location are depicted on **Figure 3-3**, Project Layout.

Table 3-1 provides further detail on each of the parcels within the project site, including the current onsite land uses, land use and zoning designations, and the project components proposed on each parcel.

TABLE 3-1 PROJECT PARCELS

Parcel	Land Use and Zoning Designations	Current Land Use/Project Components
SOLANO COUNTY		
APN 0141-030-090	Land Use: Agriculture (AG) Zoning: A-40	This 40.3-acre parcel was historically an orchard and is currently uncultivated (DWR 2024; Google Earth Pro 2025). The following project components would be constructed on this parcel: BESS, inverters, collector lines, substation, operations and maintenance facility, access roads, security lighting, perimeter fence, and a sound barrier. Two single circuit, 230-kV transmission structures would be erected in the northwest corner of the parcel for an overhead segment of the gen-tie that would extend 390 feet from the project substation until it transitions to an underground segment. A fiber optic cable pathway would also be installed on wood poles that would be parallel to but slightly offset from the gen-tie line (TT 2024a; TT 2025c).
APN 0141-030-080 (Underground Route Option #1 and #2)	Land Use: AG Zoning: A-40	This 40.7-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). The project would construct an approximately 400-foot-long underground segment of the gen-tie line within a concrete duct bank that would extend along the southern side of the Solano Irrigation District (SID) canal (Google Earth Pro 2025; TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 30 feet (NEE 2026; Google Earth Pro 2025).
APN 0133-060-070 (PG&E Vaca-Dixon Substation)	Land Use: Public/ Quasi-Public (PQP) Zoning: A-20	This 87.7-acre parcel contains the PG&E Vaca-Dixon Substation. The project would include four transmission structures constructed by PG&E, to connect the gen-tie line to the substation (TT 2024a; TT 2025c).
CITY OF VACAVILLE[1]		
APN 0133-060-010	Land Use and Zoning: Business Park (BP) Overlay: Northeast Growth Area	This approximately 2.4-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). The project would construct one 230-kV transmission structure within this parcel, which would serve as the POCO structure (TT 2024a; TT

TABLE 3-1 PROJECT PARCELS

Parcel	Land Use and Zoning Designations	Current Land Use/Project Components
		2025c) from the proposed project applicant to PG&E. The overhead gen-tie line would extend for approximately 600 feet across this parcel (Google Earth Pro 2025). A fiber optic cable pathway would also be installed on wood poles that would be parallel to but slightly offset from the gen-tie line (TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 220 feet (NEE 2026; Google Earth Pro 2025).
APN 0133-060-020	Land Use and Zoning: BP and Residential High Density (RH) Overlay: Northeast Growth Area	This 16.3-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). The project's underground gen-tie segment would transition to an overhead structure within this parcel (TT 2024a; TT 2025c). The parcel would contain a total of three single circuit, 230-kV transmission structures that would be used for an approximately 1,500-foot overhead segment of the gen-tie extending north along the east side of this parcel (Google Earth Pro 2025, TT 2024a; TT 2025c). A fiber optic cable pathway would also be installed on wood poles that would be parallel to but slightly offset from the gen-tie line (TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 220 feet (NEE 2026; Google Earth Pro 2025). Approximately 7.4 acres of this parcel would be used as a temporary laydown area during construction (TT 2024a; Google Earth Pro 2025).
APN 0141-010-030 (Underground Route Option #1)	Land Use and Zoning: BP Overlay: Northeast Growth Area	This 71.9-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). For Underground Route Option #1, the project would construct an approximately 1,500-foot-long underground segment of the gen-tie line within a concrete duct bank that would extend along the northern side of the (SID) canal (Google Earth Pro 2025; TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 50 feet (NEE 2026; Google Earth Pro 2025).

Table Notes:
1 –Many of the City of Vacaville planning and zoning designations use the same terminology to ensure consistency across land use classifications.

Figure 3-1 Project Vicinity Map

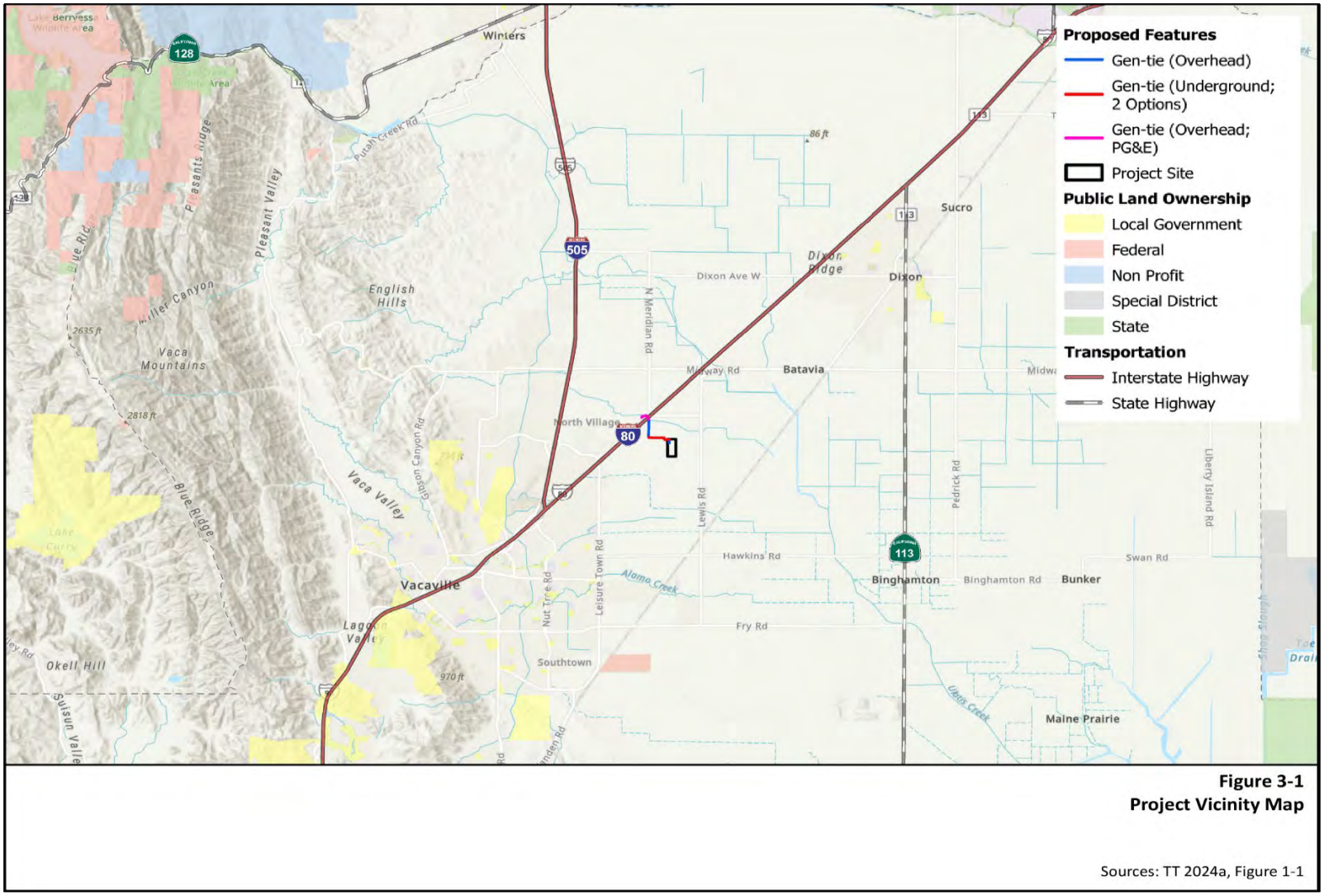


Figure 3-1
Project Vicinity Map

Sources: TT 2024a, Figure 1-1

Figure 3-2 Project Site Location

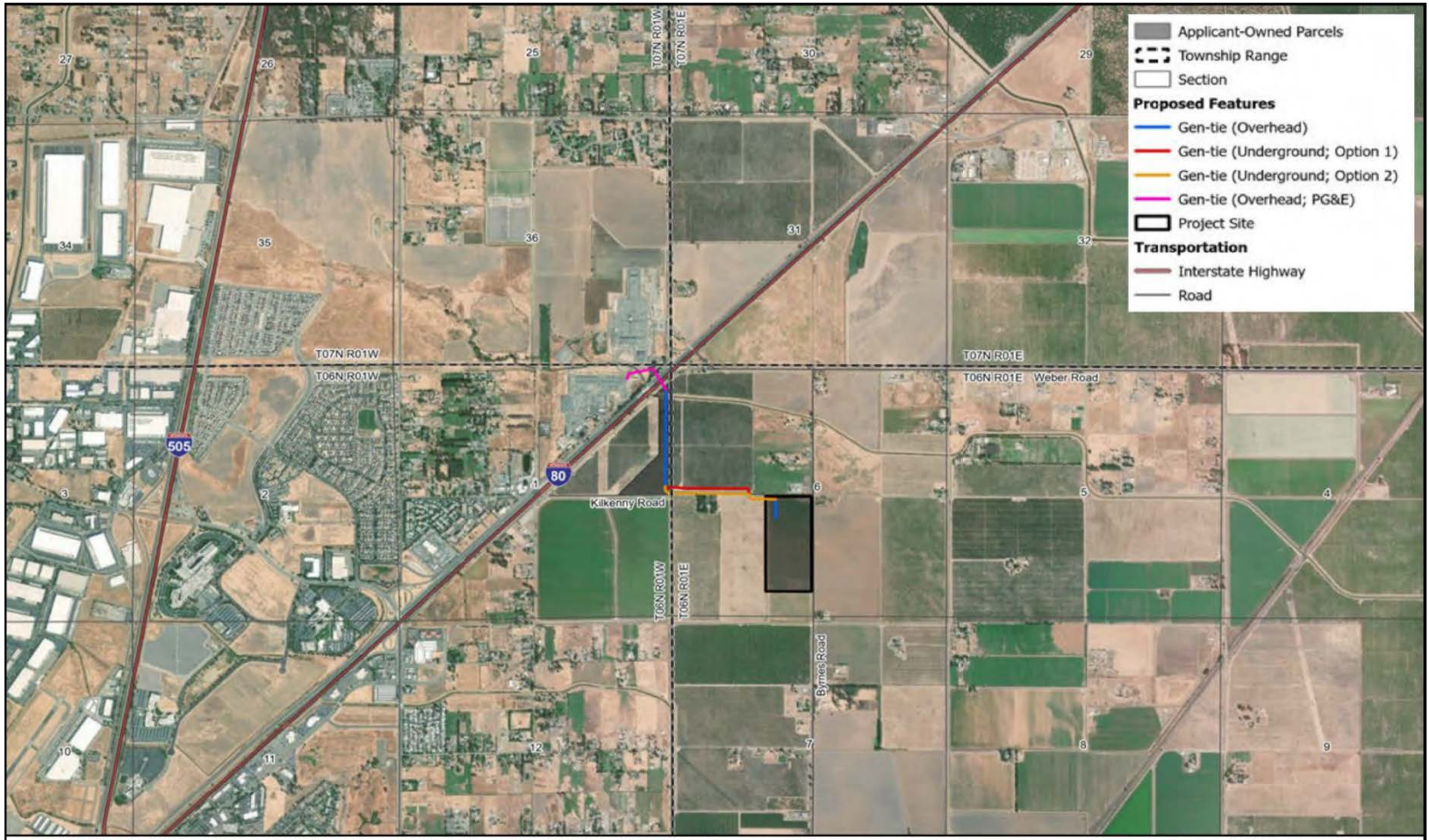


Figure 3-2
Project Site Location

Sources: TT 2024a, Figure 1-2

Figure 3-3 Project Layout

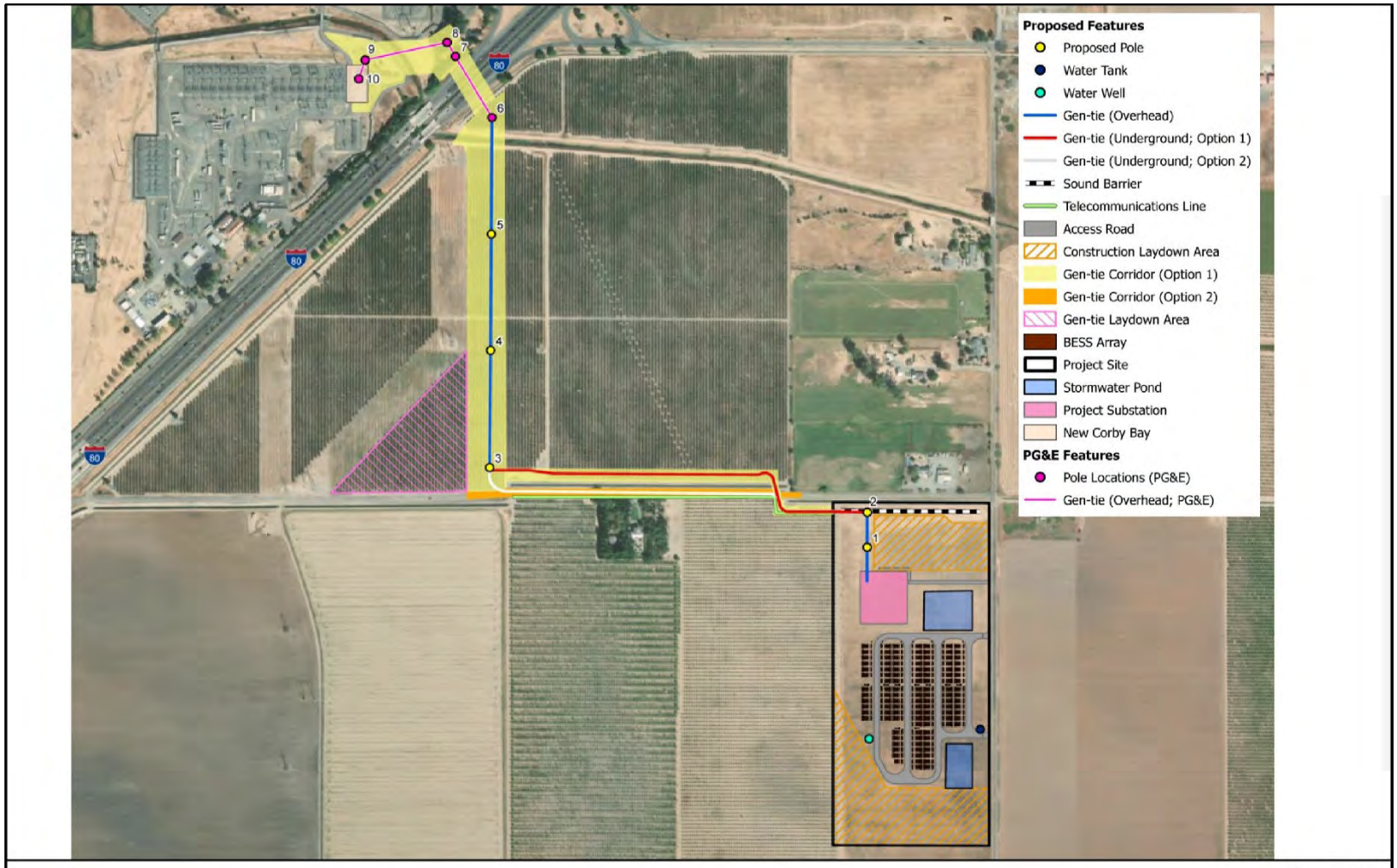


Figure 3-3
Project Layout

Sources: TT 2026a, Figure 2-1

Figure 3-4 Proposed Lot Line Adjustment

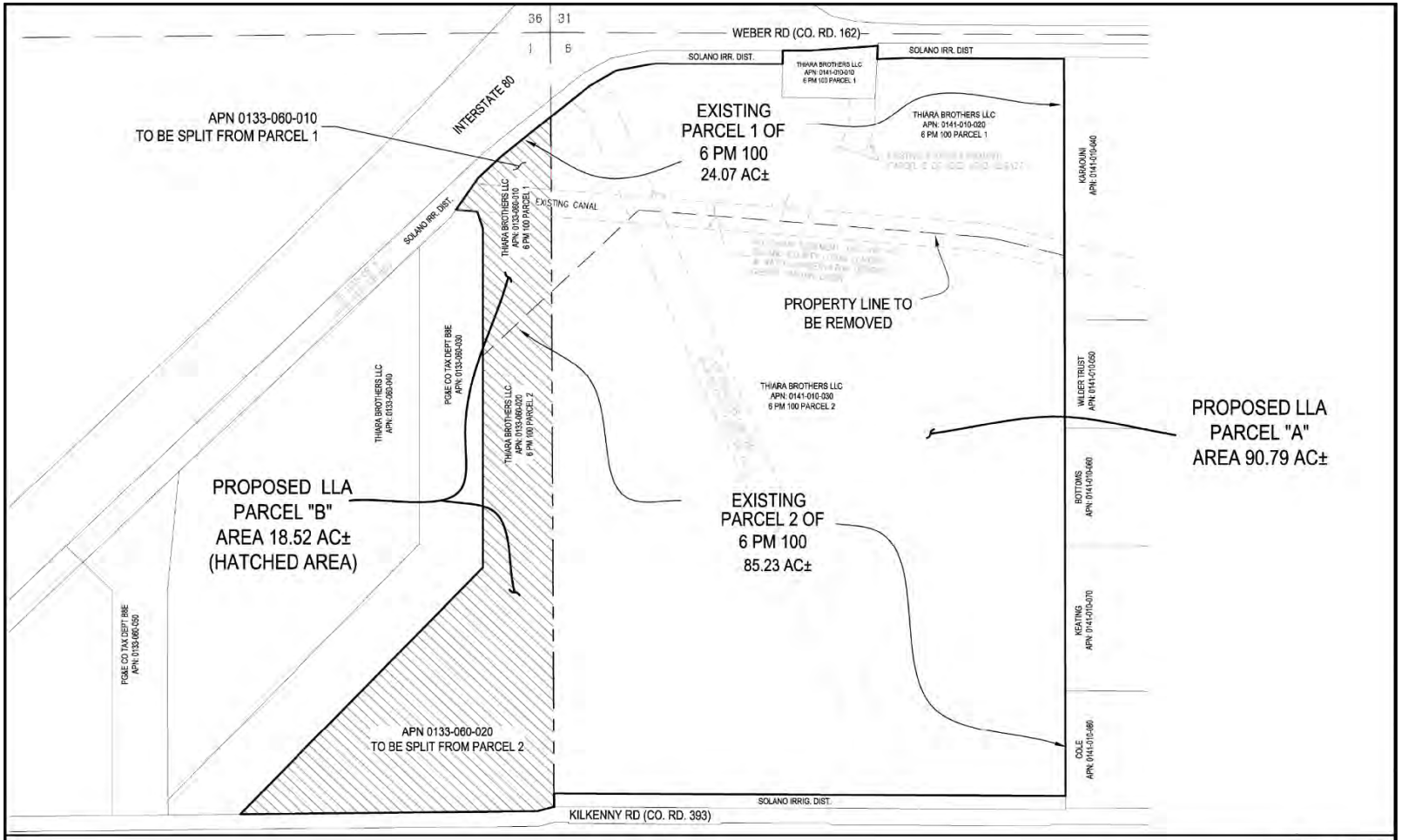


Figure 3-4
Proposed Lot Line Adjustment

Sources: NEE 2026d, Proposed Lot Line Adjustment Exhibit

Figure 3-5 Project Site Plan

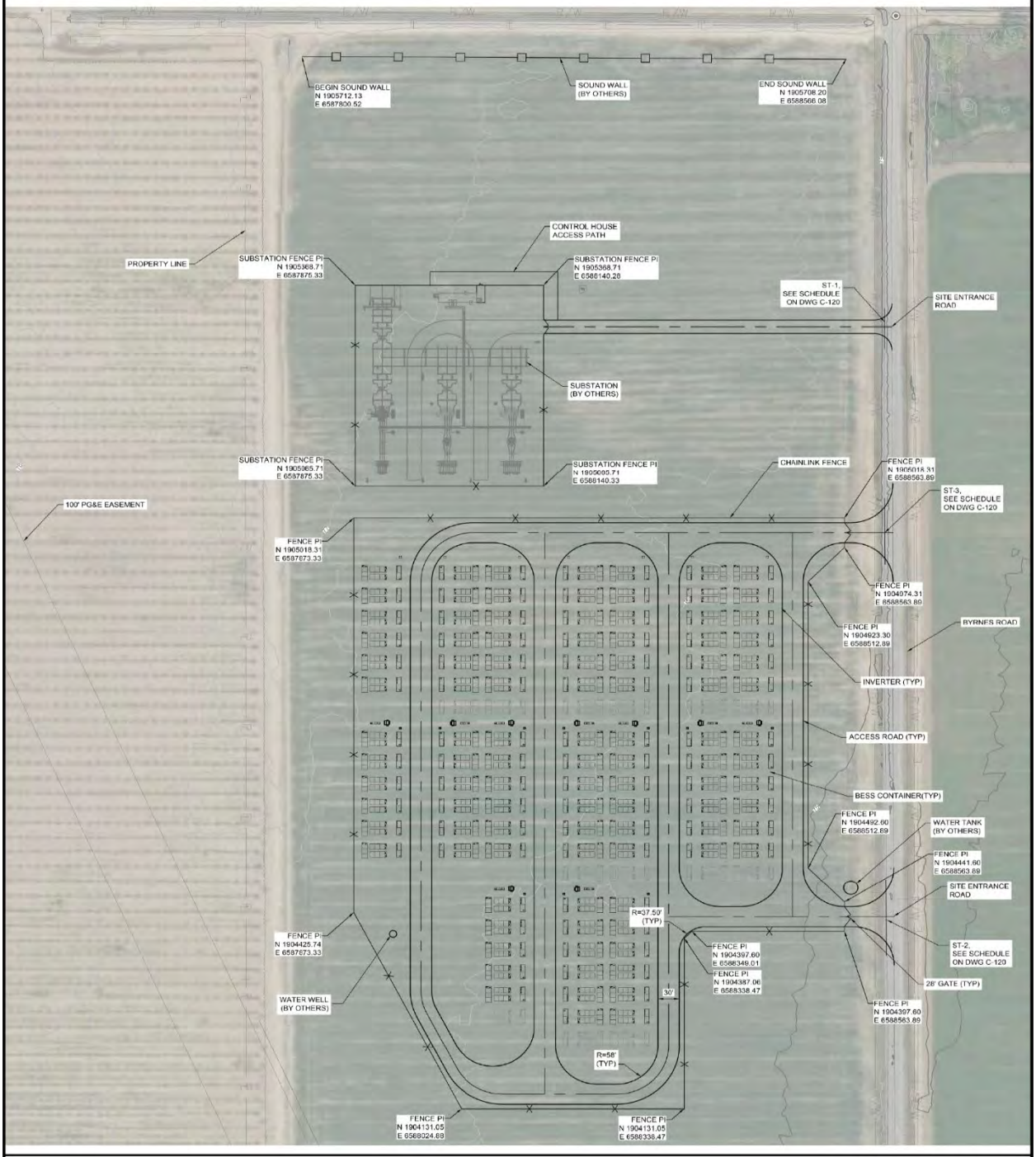


Figure Figure 3-5
Project Site Plan

Sources: : TT 2026a, Appendix 2A, Site Plan

3.5 Project Objectives

The purpose of the proposed project is "to provide energy storage with a battery energy storage system that would help meet the state's Renewable Portfolio Standard (RPS), greenhouse gas (GHG) reduction, and carbon neutrality goals (TT 2024a)."

The objectives for the project include:

- Construct and operate a 300-MW BESS close to PG&E's Vaca-Dixon Substation in Solano County to meet contractual obligations to provide energy storage services.
    - The PG&E Vaca-Dixon Substation is the only high-voltage transmission substation within 50 miles and crucial for power delivery and reliability for the region.
    - The applicant has signed contracts with PG&E, Marin Clean Energy, and CleanPowerSF to ensure grid reliability for the region to connect renewable energy resources in Solano County to the local area.
- Develop a BESS that supports grid stability and helps prevent local and regional blackouts.
- Develop a BESS that supports the efficient use of renewable energy and California's RPS goals (TT 2024a).

3.6 Facility Description and Design

The proposed project consists of the following components:

- BESS
- Onsite project substation
- Inverters
- Gen-tie line
- Telecommunications line
- Optional groundwater well
- Water tank
- Ancillary facilities

Lot Line Adjustment

The project application identifies that the gen-tie line between Kilkenny Road and I-80 would be constructed on privately-held property (APNs 0133-060-010 and 0133-060-020). In the intervening time since submitting the application, the applicant has confirmed through discussions with the owner of these parcels the intent to maintain as a separate legal parcel the remaining portions of the lands not occupied by the gen-tie line corridor (NEE 2026d). While not necessary for construction, the applicant is proposing a lot line adjustment to reshape existing parcels to conform with the project's

proposed transmission line route, as shown in **Figure 3-4**. This change would transform existing parcels "1" (24.07 ac) and "2" (85.23 ac) into newly formed parcels "A "(90.79 ac) and "B "(18.52 ac) as shown in **Table 3-2**. The project application describes this portion of the gen-tie corridor as being comprised of APNs 0133-060-010 and 0133-060-020 and would remain accurate with the proposed lot line adjustment. The proposed Parcel B configuration would contain the gen-tie line corridor, while Parcel A would be entirely outside the project boundary (NEE 2026d).

TABLE 3-2 PROPOSED LOT LINE ADJUSTMENT

	Existing Parcel 1	Proposed Parcel A	Existing Parcel 2	Proposed Parcel B
APNs	0141-010-010	0141-010-010	0141-010-030	0133-060-020
	0141-010-020	0141-010-020	0133-060-020	0133-060-010
	0133-060-010	0141-010-030		
Acres	24.07	90.79	85.23	18.52

Source: NEE 2026d

3.6.1 BESS Facility Components

Battery Energy Storage System

The project would use lithium-ion battery technology. The applicant is proposing Model JF2 DC LINK (DC LINK) batteries manufactured by LG Energy Solution (LGES). DC LINK is a BESS solution containing all the components of a BESS within a single product, including batteries, battery protection system, HVAC and liquid cooling, and energy management system (EMS). The DC LINK batteries are designed to reduce construction costs and maximize uptime, energy density, and efficiency (TT 2026g).

The BESS would include multiple self-contained, prefabricated enclosure units in a parallel configuration with spacing between each unit as required by the manufacturer. Each of the enclosure units would be approximately 9.5 feet tall, 8.4 feet wide, and 23.5 feet long. Batteries would be placed within the BESS yard on native compacted soil, gravel, and underground steel piles or concrete foundations.

The initial BESS installation would include 303 BESS enclosures at the "beginning of life" (BOL). As batteries degrade over time, additional batteries would be installed approximately every 3 years, beginning in approximately year 6 of operations, to replenish the system and maintain an overall 300-MW output. At full build-out, the project would include up to 341 BESS enclosures. The site plan, **Figure 3-5**, accounts for this augmentation activity and depicts both the BOL and full build-out BESS arrays.

The enclosure units would contain lithium-ion batteries stored on racking and there would be no internal open space available for entry or occupation. All battery racking would be fully accessible from the exterior of the enclosure via external doors. Each enclosure unit would be equipped with a thermal management system (TMS) for regulating the temperature of the batteries. Power to the TMS would be provided

through a connection to the onsite station service transformer, with connection lines installed above and/or below ground.

Each enclosure unit would have a fire rating in conformance with the local fire authority and the correlating fire code. Additionally, the proposed project would use designs and equipment that have undergone Underwriters Laboratories (UL) 9540A testing and meet other applicable UL and National Fire Protection Association (NFPA) standards. Moreover, the project would comply with applicable fire code and standards, such as NFPA 855, California Fire Code 1207, and UL 9540. Collectively, these standards require exclusive use of batteries that are UL certified and built-in fail safes designed specifically to prevent thermal runaway and the spread of fire. This includes UL 9540A testing to validate their ability to limit a thermal runaway event. Additionally, the project would adhere to the latest applicable codes, including NFPA 855. Continuous monitoring and detection systems would be included to meet California and Solano County fire code standards. Batteries are remotely operated and would be shut down automatically if abnormal conditions occur.

The JF2 platform represents LGES's latest generation of energy storage technology. Some of these enhancements include:

- Cell Chemistry: JF2 uses lithium iron phosphate (LFP) cells, which have thermal stability.
- Passive approaches for mitigating thermal runaway propagation.
- Cooling System: Advanced liquid cooling provides enhanced thermal management.
- Skidded Design: Includes pre-wiring and pre-testing.
- Explosion Protection: Builds upon previous fire safety engineering and includes roof exhaust vents, intake fans and dampers, and deflagration panels for mitigating partial volume deflagrations.

LGES confirms that, as of January 12, 2026, there have been no reported thermal events involving JF2 AC-LINK or JF2 DC-LINK products deployed in the field, under commissioning, or in testing environment (TT 2026g).

Inverters

The project would install inverters with the BESS yards adjacent to the battery enclosures. The inverters convert between alternating current, which is used by the transmission grid, and direct current, which is used to charge and discharge the batteries. As depicted on **Figure 3-5**, the project would initially include 101 inverters at the BOL and, following full augmentation, would be expanded to 114 inverters at full build-out.

The project would only use industry standard equipment that is recognized both nationally and internationally. These inverters are non-occupiable, standalone units that operate in all conditions. They operate in charge and discharge modes, are UL listed for

bidirectional use, and are monitored and controlled remotely. There would be onsite disconnects in case of an emergency or unscheduled maintenance. In case of grid disturbance on PG&E's side, the inverters would not operate until they are remotely turned on or the grid instability is stabilized for a length of time. In discharge mode, the inverters would be turned on remotely and controlled by internal circuitry and power control software at the BESS. They are designed to last more than 30 years.

Remote monitoring would be provided by the applicant's Fleet Performance and Diagnostics Center (FPDC). The FPDC is a common technology which provides remote operating, monitoring, and diagnostic services for multiple energy technologies including thermal, solar, nuclear, wind, and energy storage assets. For energy storage support, the FPDC provides 24-hour operational monitoring, diagnostics, and management of alarms as established by the NextEra's Power Generation Division's engineering and operation teams. The locally based FPDC operators are trained to interact closely with other NextEra's Power Generation Division engineering teams as needed to achieve resolution of operational issues.

Project Substation

Underground or aboveground collector lines would transmit energy between the project substation and the inverters within the BESS yards. The proposed substation would host the grid intertie safety equipment and switches required to interconnect to the high-voltage transmission system. The project substation would include switchgear and additional electrical equipment as required by PG&E specifications. The associated transformers, current limiting reactors (CLRs), control enclosure, and microwave tower would be located within the onsite substation area.

The project substation design includes three CLRs to control current spikes and equalize power flow within the parallel circuits. The substation would be approximately 1.85 acres in size. The project substation would include three generator step-up transformers to step up the voltage of electricity from 34.5 kV to 230 kV for transmission to the Vaca-Dixon Substation or step down the voltage for storage in the BESS batteries.

Underground wires and cabling would run from the battery cable collection box (inside the structure or from enclosures) to a concrete pad housing the electrical equipment listed previously. All outside electrical equipment would be housed in the appropriate National Electrical Manufacturers Association rated enclosures and screened from view on all sides.

The project substation would include an approximately 14-foot by 60-foot control enclosure housing the SCADA system. Auxiliary power required for the control enclosure and SCADA system would be provided by a connection to the local PG&E distribution system.

Operations and Maintenance Facility

The project would include operations and maintenance (O&M) equipment that would be stored in up to eight conex storage containers, each approximately 10 feet by 20 feet in size placed in open areas within the fenced BESS yard. Operational staff would perform periodic inspections and maintenance as needed using the containers for storage of non-hazardous materials, equipment and other O&M work as needed.

Ancillary Facilities

Utilities

No offsite water, sewer, or gas lines or connections would be constructed or required for the project.

Site Access and Maintenance Roads

Site access would be provided via three new 24-foot-wide connections to Byrnes Road adjacent to the eastern project site boundary, one for the project substation and two for the BESS yard (see **Figure 3-5**). Internal site maintenance roads would also be installed to allow access throughout the project site during O&M. Maintenance roads would be placed between groups of BESS enclosures at sufficient frequencies to allow for routine maintenance and emergency access. All roads would be designed to comply with the superseding fire codes, measuring at least 30 feet wide with adequate turnarounds, graveled (or potentially asphalt paved depending upon final design), extending to within 150 feet of the farthest BESS container, and would be sufficient for local fire department and California Department of Forestry and Fire Prevention (CAL FIRE) access.

Lighting

Low-elevation (i.e., less than 14-foot), controlled security lighting would be installed at the onsite substation. The lighting would only switch on when personnel enter the area (through either motion sensor or manual activation [i.e., switch]). Lighting features would only be installed in areas where it is required for safety, security, or operations. All lighting would be directed onsite and would include shielding as necessary to direct light downward and minimize illumination of the night sky or potential impacts to surrounding viewers.

Perimeter Fence

The perimeter of the BESS array and project substation would be enclosed by a 6-foot-tall chain-link fence above grade topped with 1 foot of three-strand barbed wire to prevent unauthorized access to the site. Access onto the project site would be controlled through entry/egress gates located along Byrnes Road.

Sound Barrier

A sound barrier would be used to reduce the sound levels at the nearby residential receivers north of the project site. An approximately 15-foot-high by 785-foot-long sound barrier would be installed along the northern edge of the project parcel to attenuate sound levels (see **Figure 3-5**). The proposed sound barrier would be a post and pre-cast panel system with a gray textured finish.

Signage

A sign no larger than 8 feet by 4 feet would be installed at the main entrance to identify the project site. In addition, required safety signs (e.g., to identify high voltage) as well as information for emergency services would be installed on the fence near the entrance gate and within the premises, as required.

Site Drainage

The project design incorporates onsite stormwater facilities, including a perimeter ditch and two retention basins to control facility runoff and ensure that future peak discharges from the project site do not exceed the peak discharges for the 100-year, 24-hour storm under current conditions per Solano County's standards. The retention basins would be located east of the project substation and southeast of the BESS array within the project parcel, and onsite stormwater flows would be conveyed to the proposed retention basins via overland flow and a perimeter ditch. With the exception of equipment enclosures and potentially asphalt-paved site maintenance roads, most of the project site would be surfaced with crushed rock, allowing infiltration.

Landscaping

A landscape strip would be planted along Kilkenny Road and Byrnes Road, as requested by the Solano County Planning Services Division in their preliminary project review in 2023 (TT 2024a). A 36-foot-wide landscape buffer comprising drought-tolerant and native vegetation would be used, and all landscaping would comply with the California Department of Water Resources Water Efficient Landscape requirements.

Telecommunications Line

The project would include the construction of new telecommunications facilities within the project site and along Kilkenny Road within the proposed gen-tie corridor outside of the project site. The applicant would construct an onsite telecommunications cabinet adjacent to the project substation and would install underground fiber lines from this new cabinet to a splice point located within Kilkenny Road approximately 0.35 miles west of the project site boundary, just south of where the proposed gen-tie line turns north from Kilkenny Road. These fiber lines would follow the gen-tie corridor and Underground Route Option #2 within Kilkenny Road, where they would connect to lines constructed, owned, and operated by AT&T, the local exchange carrier (LEC), at the splice point. The only telecommunications facilities proposed to be constructed by the applicant would be within the project site boundary and proposed gen-tie corridor for

Underground Route Option #2. The LEC (AT&T) would install fiber within the right-of-way of Kilkenny Road to connect from the splice point to their existing facilities. The telecommunication line would be installed using micro trenching techniques, or boring where required, limiting ground disturbance to less than a foot in width and approximately 2 to 3 feet deep (TT 2025c).

3.6.2 Water Supply and Use

Limited water would be required for construction and operations. Up to 30 acre-feet would be used during the construction phase for site grading activities, compaction, dust control, and other minor uses. Following construction, temporary irrigation would be required to support establishment of the proposed drought-tolerant perimeter landscaping. Approximately 664,000 gallons (2.0 acre-feet) of water would be required during the first year (Year 1) of operations for temporary landscaping irrigation, with that amount being reduced by approximately 30 percent per year, with cessation of irrigation after Year 5. The onsite water tank would only require refilling in the event stored water is used for emergency response activities or due to tank maintenance and would occur infrequently.

Construction and temporary landscape irrigation water would be obtained from one of the following sources:

1. Solano Irrigation District (SID). SID, the local water purveyor for the project site and surrounding area, may provide required water either via their irrigation canal abutting the project site or via their pressurized system depending on time of year, availability, and feasibility of pumping directly from the canal. Water budgets are approved on an annual basis and all construction water contracts terminate at the end of each calendar year.
2. On-site groundwater well. In the event SID is unable to meet project water supply needs, the applicant would develop an onsite groundwater well to serve construction and temporary landscape irrigation needs.

The project would require water during the initial 5 years of operation to support temporary landscape irrigation, and potential infrequent refilling of the proposed 24,000-gallon fire-water storage tank. However, no other operational water would be required. BESS equipment would not require water supply. The O&M facility equipment would be in containers, would be operated remotely, and would not have permanent sanitary facilities. Temporary sanitary facilities would be procured when required to support onsite maintenance activities.

Irrigation Canal

An east-west oriented unlined irrigation canal is located within an SID easement between the project site and Kilkenny Road. The canal is approximately 3 feet deep and 10 feet wide based on site topographic survey data, aerial imagery, and site

reconnaissance documentation. SID distributes water to irrigation users during the irrigation season, which varies annually but is typically April through October.

If canal water is available and approved for construction use by SID at the time of construction, the construction contractor would withdraw water from the canal using a temporary pumping, conveyance, and storage system. The system would include an intake screen, flexible pump intake hose, pump, shutoff valve, flexible conveyance hose, and a temporary storage tank located approximately 100 feet south of the canal within the construction laydown area. Alternatively, the water may be pumped directly into water trucks in lieu of using a temporary storage tank. The system would be manually operated as needed to fill the temporary water tank or water trucks throughout the construction phase. A similar system could be used to fill water trucks for landscape irrigation during the first 5 years of operation, if necessary.

A 5-horsepower, 245 gallon per minute (gpm), gasoline-powered centrifugal pump has been conservatively assumed by the applicant. The pump would be placed within secondary containment at least 50 feet from the canal (TT 2025c).

Offsite SID Pressurized System

If SID water is available and approved for construction use by SID, but the adjacent irrigation canal is not a suitable source due to seasonal or other constraints, the applicant's construction contractor may fill water trucks at other locations within SID's distribution system.

The SID irrigation system is defined by the Putah South Canal (PSC). SID diverts water from Lake Solano at the Putah Diversion Dam into the PSC. The PSC is the main canal that serves SID's irrigated area, from which diverge an association of sub-canals, laterals, and pipelines. Approximately half of SID irrigated lands are served primarily by pressurized systems. This includes 169 miles of pipelines or 46 percent of the total lines within the SID distribution system. SID currently has a few agricultural pipelines that have large capacities with low-volume users. These areas are typically operated as on-demand systems. Additionally, SID also provides water for nine small potable water systems and six non-potable water systems. The nearest SID pressurized pipeline to the Project area is approximately 1 mile away as is the nearest SID-owned groundwater well (SID 2018).

The following assumptions were made regarding offsite SID water use: 1) Water would be sourced within 7 miles of the project site; and 2) Up to eight water trucks would be filled daily (5 days per week) during the 9 months spanning the site grading, BESS, project substation, and gen-tie construction activities.

Groundwater Well

The applicant would develop an onsite groundwater well to serve project water supply needs in the event SID is unable to meet project water needs based on seasonal

availability, water use limitations, or other restrictions. The proposed groundwater well, if required, would be installed on the southwest side of the BESS array adjacent to a facility road. The location was selected based on the following siting factors:

- Solano County water supply well setback requirements (see **Table 3-3**),
- Distance from water supply wells on adjacent properties,
- Water truck access, and
- Avoidance of an on-site PG&E gas transmission line easement.

The Solano County Department of Resource Management requires the well to be located certain distances from the features listed in **Table 3-3** below to protect groundwater from potential contamination sources.

TABLE 3-3 SOLANO COUNTY DEPARTMENT OF RESOURCE MANAGEMENT SETBACK REQUIREMENTS FOR NON-PUBLIC SUPPLY WATER WELLS

Feature	Minimum Distance Guideline (feet)
Property line, stream, ditch, drainage course	25
Sewer line	50
Septic tank, disposal field, deep trench, animal enclosure, hazardous materials tanks	100

Source: TT 2025c

The selected location is located at least 1,000 feet from the nearest supply well on adjacent properties to minimize potential drawdown impacts. This location also maintains the required property line setback, avoids the PG&E gas transmission line easement, and would allow water truck access during construction.

A suitable well pump for a site water well with 60 gpm capacity would be a 4-inch-diameter, 5-horsepower electrical submersible pump. During construction, groundwater would either be pumped directly into water trucks or may be stored in a temporary tank placed within the onsite construction laydown area southwest of the BESS array. During operations, water would be pumped directly into a water truck to be dispensed by the temporary irrigation system.

For well construction, an area of approximately 100 feet by 100 feet would be necessary for drilling rig and equipment setup. Development of an onsite well would involve well drilling, casing installation, and well development and testing activities described below.

Well development would consist of drilling and installing an initial conductor casing. A pilot borehole would then be drilled and tested at a depth of approximately 300 to 500 feet below ground surface. The final depth of the borehole would depend on aquifer characteristics. An appropriate filter pack and well screen would then be prepared based on analysis of formation samples from geophysical surveys completed within the cleaned, pilot borehole. After a final well design has been prepared and relevant

surveys completed, the well casing would be installed within the now enlarged borehole, at which point a filter pack, transition layer, and respective cement and bentonite seals would be installed.

The initial well development would consist of utilizing air lifting methods to remove heavy drilling fluids, including sand or drilling mud. Any turbid discharge would be contained in temporary storage tanks for offsite disposal. Clear water would be contained in onsite percolation ponds. After removing any remaining sediment from the well, the drill rig and associated equipment would be demobilized, and a pump rig and associated equipment would be mobilized.

Final well development would include installing a test pump to determine sediment content and clarity of the produced water. When the well is adequately developed, aquifer tests would be conducted, the test pump would be removed, any sediments would be removed, and a downhole video survey would be performed. Finally, site cleanup and restoration would occur. A temporary well cover would be installed as would a permanent well pump and equipment (TT 2025c).

Onsite Water Tank

The applicant is proposing to install an approximately 24,000-gallon onsite water tank to be used as a backup water supply resource for Dixon Fire Protection District (DFPD) for local fire suppression needs. While fire suppression is not recommended for direct use on the BESS equipment, the water source could be used by first responders to fight wildfires or for fire events on other nearby properties at their discretion. This project element is being proposed as a benefit to the local community to help address fire suppression needs whether or not related to the Corby BESS facility.

The proposed water tank would be located adjacent to the southern BESS site access road. The water tank would be accessible via the proposed southern BESS access road off Byrnes Road. The water tank would include standard fire system connections compatible with DFPD fire engine pumping apparatus, to be specified by DFPD.

The tank would be constructed using high-strength galvanized steel and would be placed on a poured concrete foundation. The tank diameter would be 15 feet, with a peak roof height of 18.75 feet. The water tank would be filled by either by water supplied by SID or and onsite groundwater well. Under either scenario, water would be pumped into water trucks at the source location, then used to fill the tank upon completion of construction. Tank replenishment is not anticipated and would be performed infrequently. Tank inspections and maintenance would be performed in accordance with manufacturer specifications, with tank cleaning or repairs performed as needed (TT 2025c).

3.6.3 Interconnection Components

Energy would be transported between the project substation to the nearby PG&E Vaca-Dixon Substation through a gen-tie transmission line, portions of which would be installed overhead and underground. The project location was selected in the immediate vicinity of the interconnecting substation to minimize transmission interconnection length and associated constraints.

The applicant would design, construct, own, and operate the portion of the gen-tie line from the project site to the POCO located south of I-80. PG&E would design, construct, own, and operate the portion of the gen-tie line from the POCO to the Vaca-Dixon Substation, including the final five structures and the I-80 crossing. Once operational, PG&E would transfer ownership of the POCO structure south of I-80 to the applicant. In addition to the gen-tie, an offsite telecommunications line would be installed to connect the project to the local network. No offsite water, sewer, or gas lines or connections would be constructed or required for the project. Please refer to **Table 3-4** for a general overview of jurisdictional and non-jurisdictional project interconnection components.

TABLE 3-4 JURISDICTION OF PROJECT INTERCONNECTION COMPONENTS

Other Agency Approval	CEC Opt-In Certification
PG&E: One new 230-kV double bus bay with circuit breaker, switch, coupling capacitor voltage transformers, proactive relays, and fiber termination	Applicant: The approximately 0.9-mile-long 230-kV gen-tie line from the project substation to the POCO
	Applicant: Three-phase, 230/34.5/13.8-kV, 170 MVA main step-up transformers
PG&E: The approximately 0.2-mile long segment of a new 230-kV gen-tie line from the POCO to the Vaca-Dixon Substation.	Applicant: Battery inverters rated 2.2 MVA at 100 percent power factor (2.09 MW at 95 percent power factor).
AT&T: The LEC (AT&T) would install fiber within the right-of-way of Kilkenny Road to connect from the splice point to their existing facilities.	Applicant: Telecommunications facilities proposed to be constructed by the applicant would be within the project site boundary and proposed gen-tie corridor for Underground Route Option #2.

Note: PG&E would also construct a remote terminal unit and SCADA at the project site.
Sources: TT 2024a, Section 3.4.1, TT 2026g, Subsection 2.3.2.4

PG&E Vaca-Dixon Substation Network Upgrades

To accommodate the interconnection of the project and other future projects, PG&E is currently performing network upgrades that include grading, construction of concrete pads, and relocating existing structures within the Vaca-Dixon Substation. Three structures within the substation supporting the existing Vaca-Plainfield 60-kV transmission line would be relocated and designed to accommodate the equipment modifications at the substation described above and to cross under the proposed Corby 230-kV gen-tie line to allow for the appropriate separation of conductor between the lines. The structures would be replaced with single-circuit dead-end standard light duty

steel poles, which would be guyed and direct-embedded, to support the 60-kV conductors. The network upgrade activities described above are all occurring in disturbed areas within the existing PG&E substation and are authorized by the CPUC pursuant to General Order (GO) 131(d) and therefore are not part of the Corby BESS project (TT 2024a).

Specifically, for the project and within the previously graded area within the Vaca-Dixon Substation, PG&E would be installing a new 230-kV double bus bay structure with associated foundations and supports on approximately 0.6 acres of the existing substation. This new Corby Bay would house four switch support structures and associated equipment for the new 230-kV connection. Existing fencing would be replaced to extend around the new equipment, and a new 12-foot-paved roadway would be installed along the new fence section to allow access to the existing 500-kV yard road (TT 2024a).

Transmission Line Description, Design and Operation

The project would be connected to the electric transmission grid via a new, approximately 1.1-mile-long, single-circuit, three-phase 230-kV gen-tie line. The applicant would construct approximately 0.9 miles and PG&E would construct approximately 0.2 miles of the gen-tie line. The gen-tie line would include both overhead and underground segments as described below.

The underground portions of the gen-tie line would run east-west parallel to and crossing Kilkenny Road, either within acquired easements on adjacent parcels or within the City of Vacaville road right-of-way. The overhead portions would include two structures on the project site, four structures between Kilkenny Road and I-80 on private land owned by the applicant, and up to four structures north of I-80 on PG&E's Vaca-Dixon Substation property, for a total of up to 10 overhead gen-tie structures with structure heights ranging from approximately 90 to 130 feet above ground level.

The first proposed overhead alignment would begin at the project substation and extend north for approximately 390 feet, at which point the overhead line would be transitioned underground and would either cross Kilkenny Road and the SID canal before turning west and parallelling Kilkenny Road for a total underground distance of approximately 2,320 feet (Underground Route Option #1), or would be located within the City of Vacaville road right-of-way for a total underground distance of approximately 2,270 feet (Underground Route Option #2). At the end of the underground sections, the gen-tie line would be transitioned to be overhead and would extend north approximately 2,020 feet until it reaches the POCO at Structure 6. After the POCO, the line would continue to the northwest across I-80, then continue west and southwest before terminating at the New Corby Bay within the Vaca-Dixon Substation for a distance of approximately 1,110 feet. The gen-tie line and structures starting at the POCO and continuing to Vaca-Dixon Substation would be constructed, owned, and operated by PG&E. Following construction, ownership of the POCO structure would be

transferred from PG&E to the applicant, whereas the gen-tie line and structures between the POCO and Vaca-Dixon Substation would be owned and operated by PG&E.

A redundant fiber optic cable pathway would also be installed parallel to but separate from the gen-tie line in the same construction footprint and within the same acquired easements, City of Vacaville right-of-way, applicant-owned parcels, or PG&E Vaca-Dixon Substation property. This fiber optic cable pathway would include both overhead sections and underground sections in similar locations as the gen-tie line.

Overhead Transmission Line Characteristics

The proposed overhead gen-tie line would include a single-circuit, three-phase, 230-kV transmission line of three aluminum core, steel-supported (ACSS), 1272-kcmil Bittern conductors suspended via braced post insulators on approximately 90- to 130-foot-tall steel poles; however, H-Frames or 3-pole tubular steel poles may also be used at the POCO or take-off from the project substation as determined during final project design. These would be located on applicant-owned parcels or PG&E Vaca-Dixon Substation parcels. One level of optical ground wire would also be attached to the structures. The redundant fiber optic cable pathway is anticipated to be installed on wood poles that are approximately 40 to 70 feet tall and installed parallel to but slightly offset from the gen-tie line. This redundant fiber optic cable pathway would be installed in the same construction impact area and within the same applicant-owned parcels and PG&E Vaca-Dixon Substation parcels.

The specific height and location of each gen-tie structure and fiber optic pole along the length of the proposed overhead alignment would be determined upon final engineering and constructed in compliance with CPUC GO 95 and other factors, including, but not limited to, the following:

- Length of span between structures;
- Ground clearances pursuant to GO 95, PG&E, and NextEra Energy Resources, LLC (NEER), construction standards;
- Overhead clearances pursuant to GO 95, PG&E, and NEER construction standards;
- Wind loading;
- Distance between angle points; and
- Number and voltage of electrical lines installed.

The specific height, location, and design of the structures for the gen-tie line and wood poles for the redundant fiber optic cable pathway from the POCO to Vaca-Dixon Substation would be determined by PG&E during final design.

Underground Transmission Line Characteristics

Between Structures 2 and 3, the gen-tie line would be installed in an underground position. The methodology for the installation would vary by the underground route option that is ultimately pursued.

Underground Route Option #1 would be installed between Structures 2 and 3 in a concrete duct bank along with trenchless crossings under Kilkenny Road, the SID canal, PG&E gas pipelines, and other underground constraints. The duct bank would be approximately 4 feet wide and 3 feet deep and would house six conduits for power cables and two conduits that would house a ground-ground check cable and fiber optic cables. The top of the duct bank would be buried a minimum of 3 feet below the ground surface to allow for appropriate cover. One approximately 8-foot-wide by 28-foot-long by 8-foot-deep splice vault would be included to provide maintenance access to the underground cable splices. Work associated with Underground Route Option #1 would be conducted on the south side of Kilkenny Road within an approximately 60-foot-wide temporary construction easement within which would be a 30- foot-wide permanent easement, and north of Kilkenny Road within a 75-foot-wide temporary construction easement within which would be an approximately 50-foot-wide permanent easement.

Underground Route Option #2 would be installed via a horizontal directional drill (HDD) within the City of Vacaville–maintained Kilkenny Road right-of-way between Structures 2 and 3 and within a duct bank or direct buried in a similar manner as described for Underground Route Option #1 in areas outside of Kilkenny Road. The HDD is currently planned for a depth of approximately 20 feet below ground surface with a maximum depth of 30 feet. However, the actual depth would be dependent on conditions encountered during the drill. The temporary construction easement required for the HDD depends on the activities that would occur at each location but it is anticipated that the work area associated with the entry pit would be approximately 30 feet wide by 300 feet long, and the exit pit would require a work area that is approximately 30 feet wide by 100 feet long. A splice vault similar in size to the one discussed for Underground Route Option #1 would also be required near the HDD exit pit.

Regardless of the underground route option that is pursued, an underground redundant fiber optic cable pathway would be installed in proximity to the gen-tie line. The methodology for installation is anticipated to be similar to the proposed installation method for the underground route option that is ultimately pursued. Work associated with installation of the underground portion of the redundant fiber optic cable pathway would occur at a similar time as for the gen-tie and would take place within the same temporary construction easement and be installed within the same permanent easement.

3.7 Project Construction

Construction Schedule and Activities

Construction of the project is anticipated to be completed in approximately 14 months (15 months with well development as identified below), including site preparation, grading, BESS and substation installation, gen-tie construction, and project commissioning. It is anticipated that the work would be completed between 7 a.m. and 5 p.m. Monday through Friday and between 8 a.m. and 5 p.m. Saturday when required. Project construction would typically include a total of five shifts per week (Monday through Friday). Overtime and weekend work would be used only as necessary to meet scheduled milestones or accelerate schedule and would comply with applicable California labor laws and applicable Solano County Code construction noise requirements. Groundwater well development, if required, would begin 1 month ahead of construction contractor mobilization, expanding the overall duration of onsite activities to 15 months through project commissioning.

Typical construction steps are as follows and **Table 3-5** lists Typical Construction Stages and Durations:

- Site survey activities, including demarcation of construction areas and any sensitive resources needing protection;
- Erosion and sediment control measure installation;
- Groundwater well development;
- Site preparation, including vegetation removal, access road and temporary construction staging area development;
- Site grading;
- Fencing installation;
- BESS civil, mechanical, and electrical construction;
- Gen-tie site preparation, including orchard removal;
- Substation installation;
- Gen-tie foundation and tower erection;
- Underground gen-tie construction;
- Gen-tie stringing and pulling;
- Telecommunications line installation;
- Onsite water tank installation;
- BESS commissioning; and
- Final site cleanup and restoration.

TABLE 3-5 TYPICAL CONSTRUCTION STAGES AND DURATION[4]	
Task	**Duration**
Groundwater Well Development	2 months
Site Preparation	2 months
Grading	3 months
BESS Civil/Mechanical/Electrical Installation	7 months
Gen-tie Site Preparation	2 weeks
Substation Installation	6 months
Gen-tie Foundation and Tower Erection and Underground Installation	6 months
Generation Tie Stringing and Pulling	3 months
Telecommunications Line Installation	2 months
Onsite Water Tank Installation	4 months
Commissioning	3 months

Construction Workforce

Project construction including site preparation, grading, battery/container installation, substation installation, gen-tie foundation and tower erection, gen-tie stringing and pulling, telecommunication line installation, onsite water tank construction, and project commissioning would take place over 14 months. Groundwater well development, if required, would begin one month earlier and expand the overall duration to 15 months. These activities are expected to require an average workforce of approximately 80 workers over a 15-month construction period, with a peak workforce of approximately 131 workers during month seven. Please refer to **Table 3-6**, Construction Workforce.

4 Tasks will overlap; therefore, durations are not cumulative.

TABLE 3-6 CONSTRUCTION WORKFORCE

Workforce Type	Month 0[1/]	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14
BESS	**Construction**												**Commissioning**		
Construction Laborer	1	5	12	12	14	16	16	16	16	26	26	42	34	24	24
Carpenters	0	0	0	0	0	0	2	2	0	0	0	0	0	0	0
Cement Finishers	0	0	0	0	2	2	2	4	0	3	3	3	3	0	
Electricians	0	0	12	12	12	12	12	20	20	21	21	33	33	32	24
Equipment Operators	2	2	8	8	10	12	12	16	16	11	11	11	3	0	0
Pile Drivers	0	0	1	1	2	4	4	2	0	0	0	0	0	0	0
Rodmen/Ironworkers	0	0	8	8	8	8	8	4	0	0	0	0	0	0	0
Plumbers/Pipefitters	0	0	0	0	0	0	0	0	0	4	4	4	4	0	0
Welders	0	0	0	0	0	0	0	0	0	2	2	2	2	0	0
Truck Drivers	0	0	0	0	1	1	2	3	3	3	1	1	0	0	0
Project Managers/Support	1	5	8	11	12	16	20	24	20	19	18	27	27	24	16
Gen-tie[2]															
Construction Laborer								12	12	12	12				
Carpenters								2	2	2	2				
Cement Finishers								2	2	2	2				
Electricians								10	10	10	10				
Equipment Operators								5	5	5	5				
Pile Drivers								0	0	0	0				
Rodmen/Ironworkers								2	2	2	2				
Truck Drivers								2	2	2	2				

TABLE 3-6 CONSTRUCTION WORKFORCE

Workforce Type	Month 0[1/]	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14
Project Managers/Support								5	5	5	5				
Total	**4**	**12**	**49**	**52**	**61**	**71**	**78**	**131**	**115**	**129**	**126**	**123**	**106**	**80**	**64**

1/ Groundwater well development, if required, will begin one month prior to construction contractor mobilization.
2 Gen-tie workforce estimate includes underground and overhead components including PG&E gen-tie and New Corby Bay equipment installation activities.

Construction Equipment

Construction equipment would include scrapers, graders, water trucks, dozers, and compaction equipment as identified in **Table 3-7**, Typical Construction Stages and Assumed Equipment. The enclosure modules would be offloaded and installed using cranes, boom trucks, forklifts, rubber-tired loaders, rubber-tired backhoes, and other small- to medium-sized construction equipment, as needed. Construction equipment would be delivered to the site on low-bed trucks unless the equipment can be driven to the site (e.g., using boom trucks).

TABLE 3-7 TYPICAL CONSTRUCTION STAGES AND ASSUMED EQUIPMENT

Construction Stage	Equipment
Groundwater Well Drilling/Testing	Drill Rig (1), Generator sets (1), Air Compressors (1), Forklifts (1), Loader (1)
Groundwater Well Equipment Installation	Generator sets (1), Air Compressors (1), Forklifts (1), Loader (1)
Site Prep (Access Roads, Laydown Area)	Rubber Tired Loaders (1), Skid Steer Loaders (1), Tractors/Loaders/Backhoes (1)
Grading	Graders (1), Plate Compactors (1), Rollers (1), Rubber Tired Loaders (1), Skid Steer Loaders (1), Tractors/Loaders/Backhoes (1), Water Truck (1)
BESS Mechanical/Electrical Installation	Cranes (2), Air Compressors (2), Excavators (2), Plate Compactors (2), Generator Sets (2), Rollers (1), Rough Terrain Forklifts (1), Skid Steer Loaders (2), Tractors/Loaders/Backhoes (2)
Gen-tie Site Prep	Dozer (1), Excavator (1), Stump Grinder (1)
Substation Installation	Air Compressor (1), Aerial Lifts (4), Bore/Drill Rigs (1), Cranes (1), Excavators (1), Generator Sets (1), Rollers (1), Rough Terrain Forklifts (1), Rubber Tired Dozers (1), Tractors/Loaders/Backhoes (1), Trenchers (2), Skid Steer Loaders (1)
Gen-tie Foundation, Tower Erection, and Underground Installation	Air Compressors (2), Crane (1), Forklift (1), Pumps (2), Welders (2), Bore/Drill Rigs (1), Excavators (1), Water Trucks (1)
Gen-tie Stringing and Pulling	Aerial Lifts (2), Tractors/Loaders/Backhoes (2)
Onsite Water Tank Installation	Excavators (2), Backhoes (2), Bulldozers (1), Cranes (2), Welders (2), Generator Sets (2), Compactors (2), Transport Trucks (2)
Commissioning	Backhoe (1), Forklift (2), Generator, Loader (1)
Generator-only Power Phase	Generator Sets (2), Water pump (1)[1/]

1/ The Generator-only Power Phase spans the entire 14-month construction period; therefore, the SID canal water extraction pump was added to this phase.

Demarcation of Sensitive Resources

Any sensitive areas identified through the environmental approval and permitting processes to be avoided in and adjacent to the project site would be staked and flagged with orange construction fencing, at a minimum, to keep workers from entering these areas.

Erosion and Sediment Control

Erosion control best management practice measures would be implemented to minimize erosion and collect sediment and typically include straw wattles, silt fences, straw bales, check dams, maintenance of erosion control measures, concrete waste management, watering for dust control, diverting runoff from disturbed areas, and reseeding and restoration of the site.

Temporary Construction Laydown Area

Temporary construction laydown areas would be used for construction trailers, employee parking, laydown, staging, and storage of construction materials, and would be located within the project site.

Construction laydown areas would be located within open areas on the northern and southern portions of the project parcel and an additional gen-tie laydown area would be located west of the overhead portion of the gen-tie line, within an applicant-owned parcel (APN 0133-060-020). The construction and gen-tie laydown areas are depicted on **Figure 3-1**, Project Layout.

Road Infrastructure

Vegetation and minor grading would be required prior to the placement of gravel to create the main access points to the project site from Byrnes Road, and for access roads within the project site. New onsite access and maintenance roads would be graded to allow water to sheet flow across the site. Access roads on the project site would be maintained during construction and operations.

Grading and Site Preparation

Site grading would be required for the construction of the project substation, BESS array, roads, and stormwater facilities. The total graded area for the project site would be approximately 19.6 acres. The site grading would require approximately 5,538 cubic yards of import fill to achieve 0.5 percent surface slope for site drainage purposes. Fill material would be sourced from a permitted commercial facility within 50 miles of the project site.

Limited excavation activities would be required for trenching or boring for utilities, building structure foundations, and installing footings where required for structural safety. Most excavation activities would be no greater than approximately 4 to 6 feet in depth, including substation equipment and ground grid/cable trenching. The underground gen-tie trenching would be approximately 7 to 10 feet deep. Overhead gen-tie pole foundations, up to 8 feet in diameter, may extend as deep as approximately 35 feet depending on site-specific soil conditions. At locations where gen-tie poles would be installed, minor cuts may be required where the foundation would be driven.

Any agricultural crops on the site at the time of construction would be removed. In general, all vegetation would be removed from the project site during site preparation activities to clear the site for grading, facility construction, and temporary construction uses.

Additionally, approximately 21.6 acres of existing orchards would be removed throughout the gen-tie corridor and gen-tie laydown area prior to gen-tie construction. The resulting biomass would be hauled offsite to a commercial composing facility within a 50-mile radius.

Project Substation Installation

Typical construction steps include:

- Establish the work zone;
- Prepare the substation site;
- Excavate and lay the equipment foundations;
- Install the grounding grid;
- Build the control enclosure;
- Backfill the foundations and substation yard;
- Assemble the steel structures;
- Install the electrical equipment; and
- Conduct final inspections.

BESS Installation

The BESS containers would be placed on driven piles or concrete foundations, pending final design.

Power Conversion System Installation

A substation pad for the step-up transformer would be poured, followed by the installation of the medium-voltage stations, wiring of the modules through combiner boxes, and construction of the project substation and grid interconnection. The medium-voltage stations would sit on driven piles or concrete foundations, pending final design.

Inspection and Startup Testing

Prior to startup testing, the BESS array would be inspected and checked for mechanical, electrical, and control functions in accordance with the manufacturer's specifications. A series of startup procedures and tests would then be performed to ensure all equipment is operating within tolerances and that the equipment has been installed correctly in accordance with design specifications. Subsequently, the project would be connected to the PG&E Vaca-Dixon Substation and brought online.

Final Cleanup and Restoration

Removal of trash and debris from the construction sites would be performed at the completion of each workday throughout construction. During construction, vegetation within active construction areas and the laydown area would be managed. Following the completion of project construction, temporary construction laydown areas would be reseeded to stabilize site soils for erosion control.

Overhead Transmission Line Construction

Based on the proposed alignment, the project is anticipated to include tangent structures at Structures 1, 4, and 5 and riser structures at Structures 2 and 3. Design of structures from the POCO to Vaca-Dixon Substation would be conducted by PG&E. Specific structure locations and dimensions would be finalized when engineering has been completed. Each structure would be self-supported, but foundation type would differ between tangent structures and riser or dead-end structures. Foundation size and placement would be determined during final design.

Tangent structures are anticipated to use direct embedded foundations with crushed rock backfill. Excavations for the foundations would be approximately 5 feet in diameter and up to approximately 26 feet in depth. For these structures, installation would begin with excavation of the foundation area and placement of the base section of the structure, followed by backfill and compaction and construction of the remainder of the structure.

Riser and dead-end structures are anticipated to use poured concrete foundations, which would be approximately 10 feet in diameter and approximately 30 feet in depth. Structure installation would begin with the excavation of the foundation area and construction of steel reinforcement cages within the foundation area. Once the foundation concrete is poured, steel connection rods would protrude from the foundation for attachment to the overhead structures.

New structures would be delivered to the project site by a flatbed truck and assembled onsite using a truck-mounted crane. Once attached to the foundation, the structure would be grounded using grounding wire and rods. Any remaining excavated material would be placed around the foundation or spread onto access roads and adjacent areas.

The wood poles for the redundant fiber optic cable pathway would be installed parallel to but offset from the overhead portion of the gen-tie line. The wood poles would be installed in roughly the same timeframe, using similar construction techniques, and within the same defined construction impact area and permanent easement as the gen-tie. The wood poles are anticipated to use direct embedded foundations with crushed rock backfill. Excavations for these foundations would be approximately 4 feet in diameter and up to approximately 10 feet deep.

Underground Transmission Line Construction

To construct the underground portion of the gen-tie line, the applicant would first notify other utility companies via Underground Service Alert to locate and mark existing underground utilities along the proposed underground alignment. Exploratory excavations (i.e., potholing) would also be conducted to verify the locations of existing facilities in the field, if necessary. Trenches and other areas that require excavation would be excavated using a backhoe or other trenching equipment as warranted by site conditions; trench spoils would be windrowed along the alignment where possible or hauled to the project staging area for use as cover. Excess spoils would be hauled offsite to the closest approved facility for disposal.

For Underground Route Option #1, the depth of the trench would be determined according to local topography and potential conflicts but is anticipated to be approximately 7 to 10 feet deep with a width of approximately 5 feet. The trench would be widened at the splice vault location to allow for approximately 5 feet of additional clearance. Once the trench has been excavated, pre-formed, steel reinforced, precast concrete duct banks and splice vault would be transported to the associated work area on flatbed trucks and lowered into place using small truck-mounted cranes. The splice vault would be connected to the underground duct banks before being covered with appropriate backfill then compacted to approximately pre-project conditions. This Underground Route Option would require a temporary lane closure at the crossing on Kilkenny Road for approximately 2 to 4 weeks.

For Underground Route Option #2, the work area required for the HDD entry pit would be approximately 30 feet wide by 300 feet long within Kilkenny Road and adjacent areas. The HDD exit pit work area is anticipated to be approximately 30 feet wide by 100 feet long. Dimensions, depths, and exact placement within Kilkenny Road of these entry and exit pits would be determined during final design. For this option, an underground splice vault would be required within Kilkenny Road, and it would be installed in a similar manner as described in Underground Route Option #1. This Underground Route Option would require a temporary lane closure of the portion of Kilkenny Road associated with the HDD for approximately 8 to 10 weeks. Full road closure would be required at the east end of the HDD to allow for equipment setup, staging, and heavy machinery maneuverability. Single-lane closure would be required for the remainder of the HDD segment, allowing for local property and residence access throughout construction.

The underground portion of the redundant fiber optic cable pathway would be installed in a separate conduit that is parallel to but offset from the underground route option used for the gen-tie line. The underground portion of the redundant fiber optic cable pathway would be installed in roughly the same timeframe, using similar construction techniques, and within the same defined construction impact area and permanent easement as the gen-tie.

Construction Water and Wastewater Needs

Construction water would either be obtained from SID (from an adjacent irrigation canal or trucked in) or from a new onsite groundwater well. Project construction is expected to require approximately 14 months, including testing and commissioning prior to operation. Groundwater well development, if required, would begin 1 month ahead of construction contractor mobilization, expanding the overall duration of onsite activities to 15 months through project commissioning. During construction, water would be required for common construction-related purposes, including dust suppression, soil compaction, and grading. Temporary onsite water tanks and water trucks would provide water for construction needs. Drinking water and temporary sanitation facilities would be delivered to the project site. Bottled drinking water would be provided for construction workers.

The most significant water usage would occur during heavy earthwork site preparation and grading, occurring over the first few months of construction. Up to 30 acre-feet would be needed during construction, primarily during the grading phase and prior to commissioning.

Nominal sanitary wastewater would be generated during construction. Portable restroom facilities would be provided and maintained for workers during construction and would be removed upon completion of construction.

If the onsite groundwater well is required, waste groundwater would be produced during the well development and testing activities, which would require disposal. A preliminary estimated total volume of waste groundwater is approximately 50,000 gallons (9,000 gallons from initial well development, 26,600 gallons from final well development, and 14,400 gallons from aquifer testing). Groundwater would be contained onsite within temporary berms to facilitate infiltration and would not be discharged offsite. Sufficient land area is available at the site to use a bermed area for percolation without allowing any runoff. An earth-bermed area of 80 feet by 80 feet by 2.5 feet high would conservatively contain 50,000 gallons of groundwater with more than 0.5 foot of freeboard (TT 2025c).

Construction Solid Waste

Most solid waste generated during construction would be nonhazardous and consist primarily of cardboard, wood pallets, copper wire, scrap metal, common trash, and wood wire spools. Construction waste materials, such as metal and wood, would be separated from the waste stream and recycled whenever feasible. Construction materials would be handled in accordance with the California Green Building Standards Code (Title 24, California Code of Regulations Part 11), which establishes standards for construction and demolition waste management and recycling or salvage of a minimum of 65 percent of nonhazardous construction and demolition waste. Non-recyclable construction waste would be placed into commercial trash dumpsters located onsite. Dumpsters would be collected as needed by a commercial service and delivered to a

landfill. Construction would generate an average of approximately 80 cubic yards of nonhazardous solid waste per week over the 14-month construction period.

Approximately 650 tons of biomass would be generated during orchard removal ahead of gen-tie construction. A portion of the chipped biomass may be spread onsite. However, for the purposes of the environmental analyses herein it was assumed that 100 percent of this waste would be hauled off for disposal at a commercial composting facility no more than 50 miles from the project site.

If the onsite groundwater well is required, soil cuttings, drilling mud, and groundwater would be generated during drilling and well construction. Approximately 18 tons of drilled soil wastes and approximately 8,400 gallons of sediment-laden water are estimated to be generated, contained in roll- off bins prior to offsite disposal. The wastes would be transported by truck and disposed of at Hay Road Landfill located approximately 10 miles southeast of the project site. Each truckload would be limited to approximately 10 cubic yards to prevent spilling while loading the roll-off bin on to the truck. A total of 10 truckloads to the landfill are anticipated.

Construction Hazardous Materials

Construction of the project would involve the use of hazardous materials, such as fuel, lubricants, other oils, and greases, to fuel and service construction equipment. These hazardous materials required for construction activities would be stored at the temporary construction staging areas. Hazardous waste and electrical waste would be generated in limited quantities and would be transported to appropriate regulated waste handling facilities for disposal or recycling.

Construction Traffic

Delivery of material and supplies would reach the project site through on-road truck delivery by way of I-80 to Weber Road and then to Byrnes Road. Most truck deliveries would be for the battery enclosures, inverters, transformers installation, substation materials, and any concrete or aggregate material that may be required for foundations. These loads would typically be limited to 50 tons, or 100,000 pounds, with a typical cargo load of approximately 25 tons, or 50,000 pounds. The heaviest delivery loads to the site would be for the step-up transformer, which may be close to 160,000 pounds. Project personnel would also use these routes each day during the construction phase. Access to the project site would be provided via the new access points along Byrnes Road, adjacent to the eastern project site boundary.

The project has a construction schedule of approximately 14 months. Total trip generation would vary depending on the specific phase and construction stage as would each type of trip. The peak of construction activity is anticipated to occur during the seventh month of construction, with an estimated maximum of 678 daily trips, with 181 trips in the morning peak hour and 181 trips in the evening peak hour.

Construction of the gen-tie line would require temporary closure of Kilkenny Road west of the project site to allow for construction. As noted above, Underground Route Option #1 would require temporary lane closure at the crossing on Kilkenny Road for approximately 2 to 4 weeks. Underground Route Option #2, located within the Kilkenny Road right-of-way, would require full road closure immediately east of the project site to allow sufficient workspace for horizontal directional drilling (HDD) staging, drill rig, and other equipment. Partial road closure would be required west of the HDD entry location to the gen-tie laydown area to accommodate the HDD exit activities on the west side of the Underground Route Option #2. Single- lane road availability would be maintained at all times for local traffic, including the residence located on the south side of Kilkenny Road along this route. The road closures would last approximately 8 to 10 weeks.

3.8 Project Operations

Facility Operation

The project would store energy when supply for electricity is high (e.g., during the middle of the day) and return the energy to the grid when demand for electricity is high (typically between 4 p.m. and 8 p.m.), thereby reducing the need for gas-fired generation as the sun sets and electrical demand for energy simultaneously increases. The project is designed to discharge up to 300 MW, delivering up to 1,200 MWh of stored energy during peak demand periods (TT 2024a).

No permanent O&M staff would be located at the project site. The BESS would be uncrewed and operational control would be from an offsite control room through a SCADA system. The project would require up to six workers to support onsite and offsite O&M and administrative support functions. Onsite O&M activities would include performing routine visual inspections, executing minor repairs, and responding to needs for plant adjustment. On intermittent occasions, additional workers may be required for repairs or replacement of equipment or other specialized maintenance. However, due to the self-operating nature of the facility, such actions would likely occur infrequently.

One major maintenance inspection would also take place annually, requiring approximately 20 personnel for approximately one week. In addition, approximately every 3 years, the facility would require battery augmentation to maintain storage capacity. A crew of approximately 20 additional workers would be onsite for approximately 3 months to install and connect additional batteries.

The expected maintenance would generate very limited traffic during operations for O&M activities. Parking would be available onsite within the BESS areas. Additionally, the areas surrounding the project substation would be graveled and would have adequate space for parking several vehicles. O&M vehicles would include light duty trucks (e.g., pickup, flatbed) and other light equipment for maintenance. Large or heavy equipment would not be used during normal operation, but may be brought to the facility infrequently for equipment repair or replacement.

Fire Protection

Battery storage facilities include both onsite and offsite monitoring systems, as well as fire detection systems. The project would deploy a container-based system design to limit the likelihood of any type of fire event impacting more than a small portion of the site, due to physical separation between individual battery containers. The applicant would coordinate and train with local first responders and fire officials to prepare for a coordinated response in the unlikely scenario of a thermal event.

Each BESS unit would have a fire rating in conformance with local fire authority and Solano County standards, via compliance with the 2025 California Fire Code. The project's fire safety system design would comply with Section 1207 Electrical Energy Storage Systems, which adopts the NFPA's Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). Per NFPA 855, the batteries used in this project would be manufactured and tested in accordance with UL 9540A, the Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems. This test method was developed to minimize the risk of thermal runaway to address safety concerns about battery storage equipment raised by fire departments and building officials in the United States. A nationally recognized testing laboratory independently tests equipment for compliance with the latest battery energy storage safety code requirements. Compliance with these standards and certification includes a battery management system design that detects abnormal conditions, including but not limited to high temperatures at the battery cell or battery module level, and automatically shuts down the battery rack. Furthermore, installation of battery units would follow manufacturer specifications for the spacing of batteries and clearance distances to further prevent a thermal runaway event and propagation. Each unit would also be equipped with TMSs for thermal management of the batteries.

Power to the TMS and lighting would be provided through a connection to the onsite station service transformer with connection lines installed above and/or below ground. Enclosures housing batteries are designed with adequate deflagration control measures and would also be equipped with hydrogen detection that would alert the remote monitoring facility that the sensor has been activated.

Impact, Puncture, or Other Mechanical Damage

Batteries are shipped in well-designed protective containers, which include tamper-proof tilt and shock sensors that clearly indicate if that container has experienced rough handling, even if not visible to the eye. Batteries whose sensors indicate shock or damage would not be installed at the site.

Overcharging

Fail-safe systems with backup power constantly monitor each battery's state of charge to prevent overcharging. In the event of a fault, power from the grid is cut automatically and the control center is alerted.

Overheating

Temperatures within each module are automatically monitored. Containers feature fail-safe cooling systems with backup power that regulate interior temperatures. Should the container or any individual cell begin to overheat, the fire safety system would react as needed.

Short Circuits

The BESS monitoring system automatically detects short circuits and disconnects power within microseconds.

With the above controls, a BESS facility is safe to operate and would quickly neutralize potentially unsafe battery conditions to prevent, detect, and minimize the impact of a thermal event. The BESS enclosures would be listed under UL 9540 (Standard for Energy Storage Systems and Equipment).

Inverters would be listed under UL 1741 (Standard for Inverters, Converters, Controllers, and Interconnection System Equipment for Use with Distributed Energy Resources). The battery cells and modules would be listed under UL 1973 (Standard for Batteries for Use in Stationary and Motive Auxiliary Power Applications). The battery enclosures would only include batteries and associated protection and control equipment that include built-in fail safes designed specifically to prevent thermal runaway and propagation.

3.9 Waste Management

During operations, the project would not generate solid, liquid, or hazardous wastes on a regular basis. Insignificant quantities of nonhazardous solid waste would be infrequently generated by regular O&M activities and would be disposed of with standard refuse collection at a regional O&M facility.

Used lithium-ion battery cells may be considered hazardous waste in California when they are discarded, whether or not they are rechargeable. Accordingly, the battery modules included in the BESS eventually would be recycled or disposed of in accordance with the federal and California hazardous waste requirements applicable at the end of their useful life. Many battery manufacturers offer to reclaim lithium-ion batteries, as many of the component parts can be recycled from spent batteries and used in new products. In addition, the recycled materials extracted can be used in a variety of consumer products, such as lithium grease, concrete additives, and some glass products.

Any additional hazardous waste or electronic waste generated during operations would be transported to an approved waste handling facility for the specific waste stream (e.g., electronic-waste recycling). All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste.

Management of Hazardous Materials

The project would use lithium-ion batteries. The batteries would be delivered to the project site in U.S. Department of Transportation-certified vehicles and in compliance with all applicable requirements of the U.S. Department of Transportation, California Highway Patrol, and California Department of Motor Vehicles. Batteries would be housed in battery enclosures as described above.

Other hazardous materials used for operations would either be stored offsite at a regional O&M facility or stored onsite in accordance with the manufacturers' specifications and consistent with applicable regulatory requirements, including dedicated storage areas with secondary containment to prevent accidental release. Workers would be trained to engage in safe work practices and to properly identify and handle any hazardous materials onsite.

3.10 Facility Closure

The proposed project, including the BESS, inverters, project substation, gen-tie lines, and ancillary facilities, would be decommissioned when the project's life is over (anticipated to be approximately 30 years). During decommissioning, most materials are anticipated to be recycled to the greatest extent practicable. For example, the degraded lithium-ion batteries may be recycled or repurposed; the steel or aluminum battery enclosures, with concrete foundations, could also be recycled; and metal scrap equipment and parts that do not have free-flowing oil would be sent for salvage. Any materials that cannot be recycled would be disposed of according to federal, state, and local regulations in place at the time of decommissioning.

Oils, hydraulic fluids, and fuels would be transferred directly to a tanker truck from the respective tanks and vessels. It is anticipated that all oils and batteries would be recycled at an appropriate facility. Storage vessels would be rinsed and transferred to tanker trucks. Other items that are not feasible to remove at the point of generation, such as lubricants, paints, and solvents, would be kept in a locked utility structure with integral secondary containment that meets applicable requirements for hazardous waste storage until they are removed for proper disposal or recycling.

Site personnel involved in handling the materials described above would be trained on how to handle them properly. Enclosures used to store hazardous materials would be inspected regularly for any signs of failure or leakage. Transportation of the removed hazardous materials would comply with applicable regulations for transporting hazardous materials, including those set by the U.S. Department of Transportation, U.S. Environmental Protection Agency, California Department of Toxic Substances Control, California Highway Patrol, and California State Fire Marshal.

Upon removal of the project components, the site would be restored in accordance with an approved decommissioning plan. Since decommissioning activities would involve exposure and disturbance of soils, measures for erosion and sediment control would be

implemented in accordance with a separate Stormwater Pollution Prevention Plan (SWPPP), which would be required for decommissioning.

3.11 Intended Use of this Environmental Document

This environmental document supports the CEC's decision on whether to certify the construction and operation of the project. Under Public Resources Code section 25545.1, the CEC has the exclusive jurisdiction to consider and certify this project and all related permits or licenses, with narrow exceptions, are subsumed into the CEC certification.

Other state agencies retaining permit authority may also rely on information in this SA to inform their permitting and/or other approvals for this project. Since the project interconnection facilities (e.g., gen-tie line) would be owned in part by PG&E, the CPUC would have jurisdiction over approval of those portions of the project, and may rely on this SA for CEQA review obligations of any substation or interconnection facility improvements under its jurisdiction that are necessary to serve the project. PG&E would be responsible for this submittal and coordination with CPUC after the CEC issues its decision on the project.

3.12 Other Permits and Approvals that May be Required

The following federal, state, and local permits and approvals may be required to implement the proposed project.

Federal

No federal permits would be required to implement the proposed project.

State

California Public Utilities Commission

- The PG&E portion of 230 kV gen-tie qualifies as an "extension" of existing electric transmission facilities under GO 131-E sections I.F.2.a, and therefore is eligible for the Permit to Construct (PTC) process, including the PTC exemptions set forth in GO 131-E section III.B.2. The 230 kV double bus bay structure within the existing Vaca-Dixon Substation would be a substation upgrade or modification under GO 131-E, and therefore, pursuant to GO 131-E Section III.C.1.c, would not on its own require a certificate of public convenience and necessity (CPCN) or PTC.

California Department of Transportation

- PG&E would need an encroachment permit or similar property right to cross over the I-80.

Local

City of Vacaville

- While not necessary for construction, the applicant may seek a lot line adjustment for the transmission line route.

Solano Irrigation District

- Selection of gen-tie Underground Route Option #1 would require the applicant to obtain an easement or similar property right to cross under an SID canal.
- PG&E would need an easement or similar property right to cross over an SID canal.

3.13 References

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025c – Tetra Tech (TN 262632). Application Section 2 Project Description Redline. Dated April 9, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026a – Tetra Tech (TN 268258). Project Description Update #2, Part 1. Docketed January 16, 2026. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=268258&DocumentContentId=105429

TT 2026g – Tetra Tech (TN 268540). Application Section 2 Project Description markup file. Dated February 9, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Section 4

Engineering Evaluation

The purpose of this analysis is to ensure that the project would be built to applicable engineering codes, ensure public health and safety, and verify that applicable engineering plans, policies, and regulations have been identified. This analysis also evaluates the applicant's proposed design criteria, describes the design review and construction inspection process, and establishes conditions of certification that would monitor and ensure compliance with engineering plans, policies, and regulations and any other special design requirements. These conditions allow both the California Energy Commission (CEC) compliance project manager (CPM) and the applicant to adopt a compliance monitoring program that will verify compliance with these plans, policies, and regulations.

4.1 Facility Design

4.1.1 Setting

Existing Conditions

The proposed Corby Battery Energy Storage System Project (project) and a part of the linear facilities would be in unincorporated Solano County on undeveloped, rural agricultural land, on approximately 40 acres (TT 2024a, Section 1.1, and TT 2024c, Section 4.11.2). Linear facilities would also be located within the City of Vacaville. For more information on the proposed linear facilities, refer to **Section 4.3, Transmission System and Engineering**. See **Section 3, Project Description**, for a description of the jurisdictional project components and non-jurisdictional project components.

Regulatory

Federal

Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards. Title 29 of the CFR standard comprehensively addresses safety and health standards for general industry.

State

California Building Standards Code 2025 (or the latest edition in effect) (also known as Title 24, California Code of Regulations). The California Building Standards Code applies to the planning, design, operation, construction, use, and occupancy of power plants, energy storage systems, and their ancillary facilities.

Local

Solano County General Plan

Public Health and Safety Chapter. The Public Health and Safety Chapter of the Solano County General Plan is intended to protect people and property from natural and human-caused hazards, minimize the risk of injury, loss of life, and property damage, and support adaptation and resilience to climate change (Solano 2008).

General

The following are applicable general standards for the design of the jurisdictional project components:

- Air Moving and Conditioning Association (AMCA) Standards
- American Concrete Institute (ACI) Codes
- American Institute of Steel Construction (AISC) Codes
- American National Standards Institute (ANSI) Codes

- American Society of Civil Engineers (ASCE) Codes
- American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards
- American Society of Mechanical Engineers (ASME) Codes
- American Society of Testing and Materials (ASTM) Codes
- American Welding Society (AWS) Codes
- Concrete Reinforcing Steel Institute (CRSI) Codes
- National Association of Corrosion Engineers (NACE) Standards
- National Electric Safety Code (NESC) Standards
- National Fire Protection Association (NFPA) Standards
- Steel Deck Institute (SDI) – Design Manual for Floor Decks and Roof Decks
- UL Solutions Standards (formerly Underwriters Laboratories)

4.1.2 Impacts

Facility design encompasses the civil, structural, mechanical, and electrical engineering design of the jurisdictional project components. The purpose of this facility design analysis is to:

- verify that the laws, ordinances, regulations, and standards (LORS) applicable to the engineering design and construction of the project have been identified;
- verify that the project and ancillary facilities have been described in sufficient detail upon review and approval of the CEC's Delegate Chief Building Official (DCBO) including proposed design criteria and analysis methods;
- provide reasonable assurance that the project can be designed and constructed in accordance with all applicable engineering LORS, and in a manner that assures public health and safety through the DCBO's review and approval process;
- determine whether special design features should be considered during final design to deal with conditions unique to the site which could affect public health and safety through the DCBO's oversight and approval process; and
- describe the design review and construction inspection process and establish conditions of certification (COCs) that would be used to monitor and ensure compliance with the engineering LORS and any special design requirements.

4.1.3 DCBO Process

When the CEC authorizes a project owner to proceed with detailed design and construction, the CEC selects a qualified third-party firm to act on its behalf as a DCBO. In this capacity, the selected DCBO performs its design review, plan check, and construction inspection duties in accordance with the California Building Standards Code (CBSC) and the Commission Final Decision for the facility. The DCBO selection process

involves a request for qualification, including a statement of qualification from each engineering firm that applies for the CEC's solicitation, an interview process, and scoring criteria. The selected DCBO must be well qualified, with extensive experience in design review, plan check, inspection, and construction oversight of various types of power plants, energy storage systems and related facilities.

Before construction begins, the DCBO and its contractors/consultants, project owner, and construction contractor would hold a kickoff meeting to review the project scope and engineering LORS. During this meeting, the DCBO would outline their expectations, ensuring the project owner is fully informed of the CBSC and other engineering requirements necessary for successful construction, including the Solano County General Plan's Public Health and Safety Chapter and other relevant agencies' engineering requirements, as well as the COCs.

Throughout the construction and commissioning phases, the CEC Compliance Project Manager (CPM) would monitor the DCBO's activities to ensure they fulfill their responsibilities diligently. The project would only be permitted to begin operational activities once the DCBO, in collaboration with the CPM, issues the certificate of occupancy and completion. The responsibility for design of power plants and/or energy storage systems is retained by the responsible engineer(s). The duty of the DCBO is to review the engineering and construction submittals to determine that construction and industry LORS are met. The documents approved by DCBO would be used to confirm, through field inspection, that the field conditions reflect the design documentation. Any departures from approved design conditions would be reflected in the final or "as-built" construction documents, which the DCBO archives in accordance with COC **GEN-8** requirements.

The CPM would confirm and approve that the DCBO would review engineering and construction submittals, meet conditions outlined in the Facility Design COCs, retain qualified inspectors to perform special inspection services, and generally inspect all major structures, systems, and equipment to ensure that industry standards (LORS) and special project conditions (Facility Design COCs) are met. The CPM would arrange with the DCBO that an independent audit be performed in order to adequately sample that the foregoing requirements are met.

4.1.4 Project Conformance with Applicable LORS

Table 4.1-1 below details staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the jurisdictional project components would comply with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed jurisdictional project components would conform with all applicable LORS. The subsection below, "4.1.6 Proposed Conditions of Certification," contains the full text of the referenced COCs.

The jurisdictional project components would also follow the COCs **TSE-1** and **TSE-4** through **TSE-6** listed in **Section 4.3, Transmission System Engineering**. COC

TSE-1 requires that the project owner furnishes the CPM and DCBO with a transmission facility design submittals schedule, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. COCs **TSE-4** and **-5** ensure that the project owner would begin construction on the switchyard, outlet line, termination, and other transmission facility components upon approval by the DCBO and that these components would comply with applicable LORS as specified in **Section 4.3, Transmission System Engineering, Table 4.3-1**. COC **TSE-6** requires inspections of the transmission facilities during and after construction.

TABLE 4.1-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Title 29 Code of Federal Regulations (CFR), Part 1910, Occupational Safety and Health standards.	**Yes.** With implementation of COCs **GEN-1** through **GEN-8, CIVIL-1** through **CIVIL-4, STRUC-1** through **STRUC-4, MECH-1, MECH-2**, and **ELEC-1**.
State	
California Building Standards Code 2025 (or the latest edition in effect) (also known as Title 24, California Code of Regulations)	**Yes.** With implementation of COCs **GEN-1** through **GEN-8, CIVIL-1** through **CIVIL-4, STRUC-1** through **STRUC-4, MECH-1, MECH-2**, and **ELEC-1**.
Local	
Solano County General Plan – Public Health and Safety Chapter	**Yes.** With implementation of COCs **CIVIL-1** and **CIVIL-4**, and **STRUC-1** through **STRUC-4**.
General	
Air Moving and Conditioning Association (AMCA) Standards American Concrete Institute (ACI) Codes American Institute of Steel Construction (AISC) Codes American National Standards Institute (ANSI) Codes American Society of Civil Engineers (ASCE) Codes American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) Standards American Society of Mechanical Engineers (ASME) Codes American Society of Testing and Materials (ASTM) Codes American Welding Society (AWS) Codes Concrete Reinforcing Steel Institute (CRSI) Codes National Association of Corrosion Engineers (NACE) Standards National Electric Safety Code (NESC) Standards National Fire Protection Association (NFPA) Standards Steel Deck Institute (SDI) – Design Manual for Floor Decks and Roof Decks UL Solutions Standards	**Yes.** With implementation of COCs **CIVIL-1** through **CIVIL-4, STRUC-1** through **STRUC-4, MECH-1, MECH-2**, and **ELEC-1**.

Furthermore, there are no unique site constraints that require special design features. The project's preliminary design and standard engineering practices, together with the

absence of unique site constraints, provide reasonable assurance that it can be built in compliance with all applicable LORS. The information provided in this analysis is sufficient for DCBO review, and the combination of DCBO oversight, required inspections, and COCs ensure that final design and construction will meet all engineering requirements.

4.1.5 Conclusions and Recommendations

The CEC staff concludes that the design and construction of jurisdictional project components, including the BESS facility and applicant constructed segments of the linear facilities (please refer to **Section 3, Project Description**, Figure 3-3, Project Layout, project substation to pole 6) would comply with the applicable LORS, with the proposed COCs **TSE-1** and **TSE-4** through **TSE-6** (see **Section 4.3, Transmission System and Engineering**) and the following proposed COCs for facility design listed under "4.1.6 Proposed Conditions of Certification."

The proposed COCs would ensure that jurisdictional project components are designed and constructed in accordance with applicable engineering LORS. This would be accomplished through design review, plan check, and field inspections that would be performed by the DCBO. The CEC staff would oversee the DCBO's work to ensure satisfactory performance. The CEC's certification of the project would ensure the COCs are enforceable.

4.1.6 Proposed Conditions of Certification

The following proposed COCs include measures to ensure the jurisdictional project components would conform with applicable engineering LORS.

GEN-1 The project owner shall design, construct, and inspect the project in accordance with the 2025 California Building Standards Code (CBSC), also known as Title 24, California Code of Regulations, which encompasses the California Building Code (CBC), California Building Standards Administrative Code, California Electrical Code, California Mechanical Code, California Plumbing Code, California Energy Code, California Fire Code, California Green Building Standards Code, California Reference Standards Code, and all other applicable engineering laws, ordinances, regulations, and standards (LORS) in effect at the time initial design plans are submitted to the Delegate Chief Building Official (DCBO) for review and approval (the CBSC in effect is the edition that has been adopted by the California Building Standards Commission and published at least 180 days previously). The project owner shall ensure that all the provisions of the above applicable codes are enforced during the design, construction, and inspection of the facility.

In the event that the initial engineering designs are submitted to the DCBO when the successor to the 2025 CBSC is in effect, the 2025 CBSC provisions shall be replaced with the applicable successor provisions. Where, in any specific case, different sections of the code specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict

between a general requirement and a specific requirement, the specific requirement shall govern.

The project owner shall ensure that all contracts with contractors, subcontractors, and suppliers clearly specify that all work performed and materials supplied comply with the codes listed above.

After the facility has begun commercial operation, the project owner shall ensure that any addition, alteration, moving (onsite), demolition, repair, or maintenance of the completed facility are performed in accordance with the CBSC and all other applicable LORS in effect at the time of those activities.

Verification: Within 30 days following receipt of the certificate of occupancy (CofO), the project owner shall submit to the Compliance Project Manager (CPM) a statement of verification, signed by the responsible engineer(s), attesting that all designs, construction, installation, and inspection requirements of the applicable LORS and the California Energy Commission's (CEC's) decision have been met in the area of Facility Design. The project owner shall provide the CPM a copy of the CofO within 30 days of receipt from the DCBO.

Once the CofO has been issued, the project owner shall inform the CPM at least 30 days prior to any construction, addition, alteration, moving (onsite), demolition, repair, or maintenance to be performed on any portion(s) of the completed facility that requires DCBO approval for compliance with the above codes. The CPM will then determine if the DCBO needs to approve the work.

GEN-2 Before submitting the initial engineering designs for DCBO review, the project owner shall furnish the CPM and the DCBO with a schedule of facility design submittals, and master drawings and master specifications list. The master drawings and master specifications list shall contain a list of proposed submittal packages of designs, calculations, and specifications for major structures, systems, and equipment. Major structures, systems, and equipment are structures and their associated components or equipment that are necessary for energy storage and/or power production, costly or time consuming to repair or replace, are used for the storage, containment, or handling of hazardous or toxic materials, or could become potential health and safety hazards if not constructed according to applicable engineering LORS. The schedule shall contain the date of each submittal to the DCBO. To facilitate audits by the CEC staff, the project owner shall provide specific packages to the CPM upon request.

Verification: At least 60 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO and to the CPM the schedule, and the master drawings and master specifications list of documents to be submitted to the DCBO, for review and approval. These documents shall be the pertinent design documents for the major structures, systems, and equipment defined above in Condition of

Certification **GEN-2**. Major structures, systems, and equipment shall be added to or deleted from the list only with CPM approval. The project owner shall provide schedule updates in the monthly compliance report (MCR).

GEN-3 The project owner shall make payments to the DCBO for design review, plan checks, construction inspections, and other applicable DCBO activities, based upon a reasonable fee schedule to be negotiated between the project owner and the DCBO. If the CEC delegates the DCBO function to a third party or local agency, the project owner, at the CEC's direction, shall make payments directly to the DCBO based upon a fee schedule negotiated between the CEC, the project owner, and the DCBO. These fees may be consistent with the fees listed in the 2025 CBC, adjusted for inflation and other appropriate adjustments; may be based on the value of the facilities reviewed; may be based on hourly rates; or may be otherwise agreed upon by the project owner and the DCBO.

Verification: The project owner shall make the required payments to the DCBO in accordance with the agreement between the project owner and the DCBO. If the CEC delegates the DCBO function to a third party or local agency, the project owner, at the CEC's direction, shall make payments directly to the DCBO based upon a fee schedule negotiated between the CEC, the project owner, and the DCBO. The project owner shall send a copy of the DCBO's receipt of payment to the CPM in the next MCR indicating that applicable fees have been paid.

GEN-4 Prior to the start of rough grading, the project owner shall assign a California-registered architect, or a structural or civil engineer, or a construction project manager with experience in constructing renewable energy projects as the resident engineer (RE) in charge of the project.

If the construction project manager's role is limited to tasks such as overseeing construction activities, ensuring safety compliance, or managing project logistics without engaging in the design or engineering decision-making processes, licensure may not be necessary. Otherwise, licensure shall be required.

The RE shall:

1. Monitor progress of construction work requiring DCBO design review and inspection to ensure compliance with LORS;
2. Ensure that construction of all facilities subject to DCBO design review and inspection conforms in every material respect to applicable LORS, these conditions of certification, approved plans, and specifications;
3. Prepare documents to initiate changes in approved drawings and specifications when either directed by the project owner or as required by the conditions of the project;

4. Be responsible for providing project inspectors and testing agencies with complete and up-to-date sets of stamped drawings, plans, specifications, and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the DCBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the DCBO of corrective action or the disposition of items noted on laboratory reports or other tests when they do not conform to approved plans and specifications.

The RE (or their delegate) must be located at the project site or be available at the project site within a reasonable time, during any hours in which construction takes place.

The RE shall have the authority to halt construction and to require changes or remedial work if the work does not meet requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer or construction project manager to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO for review and approval, the resume and qualifications registration number of the RE and any other delegated engineers or construction project manager assigned to the project. The project owner shall notify the CPM of the DCBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) is subsequently reassigned or replaced, the project owner has five days to submit the name, qualifications, and registration number of the newly assigned engineer or construction project manager to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer within five days of the approval.

GEN-5 Prior to the start of rough grading, the project owner shall assign at least one of each of the following California registered engineers to the project: a civil engineer; a soils, geotechnical, or civil engineer experienced and knowledgeable in the practice of soils engineering; and an engineering geologist. Prior to the start of construction, the project owner shall assign at least one of each of the following California registered engineers to the project: a design engineer who is either a structural engineer or a civil engineer fully competent and proficient in

the design of project structures and equipment supports; a mechanical engineer; and an electrical engineer. (California Business and Professions Code sections 6704, 6730, 6731, and 6736 require state registration to practice as a civil engineer or structural engineer in California).

The tasks performed by the civil, mechanical, electrical, or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (for example, proposed earthwork, civil structures, project structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit to the DCBO for review and approval, the names, qualifications, and registration numbers of all responsible engineers assigned to the project.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned responsible engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer.

1. The civil engineer shall:
    a. Review the foundation investigations, geotechnical, or soils reports prepared by the soils engineer, the geotechnical engineer, or by a civil engineer experienced and knowledgeable in the practice of soils engineering;
    b. Design (or be responsible for the design of), stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities requiring design review and inspection by the DCBO. These include, but may not be limited to grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and
    c. Provide consultation to the RE during the construction phase of the project and recommend changes in the design of the civil works facilities and changes to the construction procedures.
2. The soils engineer, geotechnical engineer, or civil engineer experienced and knowledgeable in the practice of soils engineering, shall:
    a. Review all the engineering geology reports;

b. Prepare the foundation investigations, geotechnical, or soils reports containing field exploration reports, laboratory tests, and engineering analysis detailing the nature and extent of the soils that could be susceptible to liquefaction, rapid settlement, or collapse when saturated under load; and

c. Recommend field changes to the civil engineer and RE.

This engineer shall be authorized to halt earthwork and to require changes if site conditions are unsafe or do not conform to the predicted conditions used as the basis for design of earthwork or foundations.

1. The engineering geologist shall:
   a. Review all the engineering geology reports and prepare a final soils grading report.
2. The design engineer shall:
   a. Be directly responsible for the design of the proposed structures and equipment supports;
   b. Provide consultation to the RE during design and construction of the project;
   c. Monitor construction progress to ensure compliance with engineering LORS;
   d. Evaluate and recommend necessary changes in design; and
   e. Prepare and sign all major building plans, specifications, and calculations.
3. The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the DCBO, stating that the proposed final design plans, specifications, and calculations conform to all of the mechanical engineering design requirements set forth in the CEC's decision.
4. The electrical engineer shall:
   a. Be responsible for the electrical design of the project; and
   b. Sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of rough grading, the project owner shall submit to the DCBO for review and approval, resumes and registration numbers of the responsible civil engineer, soils (geotechnical) engineer, and engineering geologist assigned to the project.

At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of construction, the project owner shall submit to

the DCBO for review and approval, resumes and registration numbers of the responsible design engineer, mechanical engineer, and electrical engineer assigned to the project.

The project owner shall notify the CPM of the DCBO's approvals of the responsible engineers within five days of the approval.

If any one of the designated responsible engineers is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer within five days of the approval.

GEN-6 Prior to the start of an activity requiring special inspection, including prefabricated assemblies, the project owner shall assign to the project, qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 2025 CBC.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the DCBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Inspect the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the DCBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the DCBO and the CPM for corrective action; and
4. Submit a final signed report to the RE, DCBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans, specifications, and other provisions of the applicable edition of the CBC.

Verification: At least 15 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of an activity requiring special inspection, the project owner shall submit to the DCBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also

submit to the CPM a copy of the DCBO's approval of the qualifications of all special inspectors in the next MCR.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the DCBO for approval. The project owner shall notify the CPM of the DCBO's approval of the newly assigned inspector within five days of the approval.

GEN-7 If any discrepancy in design and/or construction is discovered in any engineering work that has undergone DCBO design review and approval, the project owner shall document the discrepancy and recommend required corrective actions. The discrepancy documentation shall be submitted to the DCBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, applicable sections of the CBC and/or other LORS. Minor discrepancies such as typos or minor in-field adjustments that do not significantly change design or construction would not need approval.

Verification: The project owner shall transmit a copy of the DCBO's approval of any corrective action taken to resolve a discrepancy to the CPM in the next MCR. If any corrective action is disapproved, the project owner shall notify the CPM, within five days, of the reason for disapproval and submit the revised corrective action to obtain DCBO's review and approval.

GEN-8 The project owner shall obtain the DCBO's final approval of all completed work that has undergone DCBO design review and approval. The project owner shall request the DCBO to inspect the completed structure and review the submitted documents. The project owner shall notify the CPM after obtaining the DCBO's final approval. The project owner shall retain one set of approved engineering plans, specifications, and calculations (including all approved changes) at the project site, or at another accessible location, during the operating life of the project. Electronic copies of the approved plans, specifications, calculations, and marked-up as-built shall be provided to the DCBO for retention by the CPM.

Verification: Within 15 days of the completion of any work, the project owner shall submit to the DCBO, with a copy to the CPM in the next MCR, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans. After retaining for the record the final approved engineering plans, specifications, and calculations described above, the project owner shall submit to the CPM a letter stating both that the above documents have been retained and the storage location of those documents.

Within 90 days of the completion of construction, the project owner shall provide to the DCBO three sets of electronic copies of the above documents at the

project owner's expense. These are to be provided in the form of "read only" files (the latest version of Adobe .pdf available), with restricted (password-protected) printing privileges.

CIVIL-1 The project owner shall submit to the DCBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. A construction storm water pollution prevention plan (SWPPP);
4. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
5. Soils, geotechnical, or foundation investigations reports required by the 2025 CBC.

Verification: At least 15 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of site grading the project owner shall submit the documents described above to the DCBO for design review and approval. In the next MCR following the DCBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the DCBO.

CIVIL-2 The resident engineer or delegate shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible soils engineer, geotechnical engineer, or the civil engineer experienced and knowledgeable in the practice of soils engineering, identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications, and calculations to the DCBO based on these new conditions. The project owner shall obtain approval from the DCBO before resuming earthwork and construction in the affected area.

Verification: The project owner shall notify the CPM within 24 hours when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within 24 hours of the DCBO's approval to resume earthwork and construction in the affected areas, the project owner shall provide to the CPM a copy of the DCBO's approval.

CIVIL-3 The project owner shall perform inspections in accordance with the 2025 CBC. All site-grading operations, for which a grading permit is required, shall be subject to inspection by the DCBO.

If, in the course of inspection, it is discovered that the work is not being performed in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the DCBO, and the CPM. The project owner shall prepare a written non-conformance report, with copies to the

DCBO and the CPM, detailing all discrepancies, non-compliance items, and the proposed corrective action.

Verification: Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the DCBO and the CPM a non-conformance report (NCR), and the proposed corrective action for review and approval. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the DCBO and the CPM. A list of NCRs for the reporting month shall also be included in the following MCR.

CIVIL-4 After completion of finished grading and erosion and sedimentation control and drainage work, the project owner shall obtain the DCBO's approval of the final grading plans (including final changes) for the erosion and sedimentation control work. The civil engineer shall state that the work within their area of responsibility was done in accordance with the final approved plans.

Verification: Within 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) of the completion of the erosion and sediment control mitigation and drainage work, the project owner shall submit to the DCBO, for review and approval, the final grading plans (including final changes) and the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of the DCBO's approval to the CPM in the next MCR.

STRUC-1 Prior to the start of any increment of construction, the project owner shall submit plans, calculations, and other supporting documentation to the DCBO for design review and acceptance for all project structures, systems, and equipment identified in the DCBO-approved master drawing and master specifications list. The design plans and calculations shall include the lateral force procedures and details as well as vertical calculations.

Construction of any structure or component shall not begin until the DCBO has approved the lateral force procedures to be employed in designing that structure or component. The project owner shall:

1. Obtain approval from the DCBO of lateral force procedures proposed for project structures;
2. Obtain approval from the DCBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (for example, highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications;

3. Submit to the DCBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation;
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations, and specifications shall be signed and stamped by the responsible design engineer; and
5. Submit to the DCBO the responsible design engineer's signed statement that the final design plans conform to applicable LORS.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of construction of any structure or component listed in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO the above final design plans, specifications and calculations, with a copy of the transmittal letter to the CPM.

The project owner shall submit to the CPM, in the next MCR, a copy of a statement from the DCBO that the proposed structural plans, specifications, and calculations have been approved and comply with the requirements set forth in applicable engineering LORS.

STRUC-2 The project owner shall submit to the DCBO the required number of sets of the following documents related to work that has undergone DCBO design review and approval:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder qualifications, certifications, qualified procedure description or number (ref: AWS); and
5. Reports covering other structural activities requiring special inspections shall be in accordance with the 2025 CBC.

Verification: If a discrepancy is discovered in any of the above documents that have undergone DCBO design review and approval, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies and

the proposed corrective action to the DCBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the DCBO and the CPM.

The project owner shall transmit a copy of the DCBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall notify the CPM, within five days, of the reason for disapproval, and submit and the revised corrective action to obtain DCBO's review and approval.

STRUC-3 The project owner shall submit to the DCBO design changes to the final plans required by the 2025 CBC, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give to the DCBO prior notice of the intended filing.

Verification: On a schedule suitable to the DCBO, the project owner shall notify the DCBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the DCBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the MCR, when the DCBO has approved the revised plans.

STRUC-4 Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in the 2025 CBC shall, at a minimum, be designed to comply with the requirements of that chapter.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of installation of the tanks or vessels containing the above specified quantities of toxic or hazardous materials, the project owner shall submit to the DCBO for design review and approval final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the DCBO approvals of plan checks to the CPM in the MCR following receipt of such approvals. The project owner shall also transmit a copy of the DCBO's inspection approvals to the CPM in the MCR following completion of any inspection.

MECH-1 The project owner shall submit, for DCBO design review and approval, the proposed final design, specifications, and calculations for the project's mechanical-related components listed in the DCBO-approved master drawing and master specifications list. The submittal shall also include the applicable Quality Assurance/Quality Control procedures. Upon completion of construction of any such component, the project owner shall request the DCBO's inspection approval of that construction.

The responsible mechanical engineer shall stamp and sign all plans, drawings, and calculations for the project's major mechanical-related components, subject to DCBO design review and approval, and submit a signed statement to the DCBO when the proposed components have been designed, fabricated, and installed in accordance with all of the applicable LORS, which may include, but are not limited to:

1. NACE SP187 (Design for Corrosion Control of Reinforcing Steel in Concrete);
2. NFPA 70B (Practices for Electrical Equipment Maintenance—to reduce hazard to life safety);
3. OSHA 1910.119 Process Safety Management of Highly Hazardous Chemicals, Toxins and Reactive;
4. Title 24, California Code of Regulations, Part 2 (California Building Code);
5. Title 24, California Code of Regulations, Part 5 (California Plumbing Code);
6. Title 24, California Code of Regulations, Part 6 (California Energy Code, for building energy conservation systems and temperature control and ventilation systems); and
7. UL Standard 9540 (Standard for Safety for Energy Storage Systems and Equipment).

The DCBO may deputize inspectors to carry out the functions of the CEC's code enforcement mandate.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of any increment of major mechanical-related components' construction listed in the DCBO-approved master drawing and master specifications list, the project owner shall submit to the DCBO for design review and approval the final plans, specifications, and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with applicable LORS, and shall send the CPM a copy of the transmittal letter in the next MCR.

The project owner shall transmit to the CPM, in the MCR following completion of any inspection, a copy of the transmittal letter conveying the DCBO's inspection approvals.

MECH-2 The project owner shall submit to the DCBO for design review and approval the design plans, specifications, calculations, and quality control procedures for any permanent heating, ventilating, air conditioning (HVAC) or refrigeration system.

Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

The project owner shall design and install all permanent HVAC and refrigeration systems within buildings and related structures in accordance with the CBC and other applicable codes. Upon completion of any increment of construction, the project owner shall request the DCBO's inspection and approval of that construction. The final plans, specifications and calculations shall include approved criteria, assumptions, and methods used to develop the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the DCBO that the proposed final design plans, specifications and calculations conform with the applicable LORS.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of construction of any permanent HVAC or refrigeration system, the project owner shall submit to the DCBO the required HVAC and refrigeration calculations, plans, and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the CBC and other applicable codes, with a copy of the transmittal letter to the CPM.

ELEC-1 Prior to the start of any increment of electrical construction for all electrical equipment and systems 110 Volts (V) or higher (see a representative list, below) the project owner shall submit, for DCBO design review and approval, the proposed final design, specifications, and calculations. Upon approval, the above listed plans, together with design changes and design change notices, shall remain on the site or at another accessible location for the operating life of the project. The project owner shall request that the DCBO inspect the installation to ensure compliance with the requirements of applicable LORS.

1. Final design plans shall include:
    a. one-line diagram for the 34.5 kilovolts (kV) and 480 V systems;
    b. system grounding drawings;
    c. lightning protection system; and
    d. hazard area classification plan.
2. Final calculations must establish:
    a. short-circuit ratings of facility equipment;
    b. ampacity of feeder cables;
    c. voltage drop in feeder cables;
    d. system grounding requirements;
    e. coordination study calculations for fuses, circuit breakers and protective relay settings for the 34.5 kV, 110 V, and 480 V systems;
    f. system grounding requirements;

g. lighting energy calculations; and

h. 110-Volt system design calculations and submittals showing feeder sizing, transformer and panel load confirmation, fixture schedules and layout plans.

3. The following activities shall be reported to the CPM in the MCR:

a. Receipt or delay of major electrical equipment;

b. Testing or energizing of major electrical equipment; and

c. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the CEC decision.

Verification: At least 30 days (or a project owner and DCBO mutually agreed upon alternative time frame) prior to the start of each increment of electrical construction, the project owner shall submit to the DCBO for design review and approval the above listed documents.

The project owner shall include in this submittal a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS and shall send the CPM a copy of the transmittal letter in the next MCR.

4.1.7 Recommended Mitigation Measures

There are no recommended mitigation measures for facility design.

4.1.8 References

Solano 2008 – Solano County General Plan Resources Chapter. Dated November 2008. Accessed on: October 29, 2025. Accessed online at: https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

4.2 Facility Reliability

4.2.1 Setting

Existing Conditions

The proposed Corby Battery Energy Storage System Project (project) is a 300-megawatt (MW) battery energy storage system (BESS) that would be built on a privately owned parcel of land in Solano County, California (TT 2024a, Section 1.1). This analysis evaluates the proposed project to determine if the energy-storage facilities, specifically the BESS, would be built in accordance with typical industry norms for reliable operation.

Regulatory

Public Resources Code section 25520 requires that applications for certification contain facility reliability information and Public Resources Code section 25523(h) requires the written decision to contain a discussion on the electricity reliability benefits of the project. These two sections are made applicable to the evaluation of the project through Public Resources Code sections 25545.2 and 25545.8. This analysis addresses section 25520 regarding the facility's reliability, and **Section 4.3, Transmission System Engineering**, addresses section 25523(h) regarding the project's impacts on, and benefits to the reliability of, the electricity network the project would serve.

4.2.2 Impacts

Energy storage systems must be able to operate for extended periods without shutting down for maintenance or repairs and must achieve an availability factor similar to the existing power plant and energy storage facilities in the California electricity grid system. To achieve this, this reliability analysis of the project's energy storage system encompasses the following benchmarks:

- equipment availability;
- facility maintainability and maintenance program; and
- facility reliability in relation to natural hazards.

California Energy Commission (CEC) staff uses the above benchmarks as appropriate industry norms to evaluate the project's reliability and determine if its availability factor is achievable.

Equipment Availability

Equipment availability would be ensured based on several factors, including but not limited to, component availability from the manufacturer and site conditions, prior to procurement, construction, and operation. In addition, the project must provide adequate maintenance and repair of the equipment and systems during operations. An

operation and maintenance protocol would be implemented in accordance with the maintenance requirements prescribed by the BESS manufacturer.

Emergency Backup Power

The project would rely on the BESS or a separate auxiliary power connection to the local utility distribution system as backup during outages to support critical loads (TT 2024a, Section 2.3.6.1).

Facility Maintainability and Maintenance Program

Equipment manufacturers provide maintenance recommendations for their products, and facility owners typically develop their facility's maintenance program based on those recommendations. Such a program encompasses both preventive and predictive maintenance techniques. The project would develop and implement its maintenance program in the same way. Moreover, the project would implement a Supervisory Control and Data Acquisition (SCADA) management system, which monitors facility operation and provides communications and control of critical components. This system would remotely monitor the project and would alert when it is time for preventative or corrective maintenance activities such as replacing various electrical components, helping ensure the project's operational efficiency and reliability.

Facility Reliability in Relation to Natural Hazards

Natural forces can threaten the reliable operation of a facility. Seismic shaking (earthquakes) could present credible threats to the project's reliable operation.

Seismic Shaking

Seismic events affect many regions in California, including the project site. According to the United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States and the CGS Fault Activity Map of California, there are no Holocene-active, nor potentially active, faults intersecting the project site. The closest Holocene-active or potentially active fault to the proposed project site is the Great Valley thrust fault zone, which is five miles west of the project site. See **Section 5.6, Geology, Paleontology, and Minerals**, for more information, and evaluation of potential impacts related to faults and seismic hazards.

The project would be designed and constructed to meet the latest applicable engineering codes. Compliance with the latest seismic design requirements represents an upgrade in performance during seismic shaking, compared to older facilities, since these requirements have been continually upgraded and made more stringent. Because the project would be built to the latest seismic design requirements, it would be expected to perform better than the older existing energy storage facilities in similar seismically active or potentially active regions that are connected to California's electricity grid system.

CEC staff proposes conditions of certification (COCs) to ensure the project complies with these requirements; see COC **GEO-1** (geotechnical investigations and geohazards report and their recommendations) in **Section 5.6, Geology, Paleontology, and Minerals**, and COCs **GEN-1** (final on-site inspection of project construction), **GEN-5** (requiring registered engineers to oversee design and construction of the project), and **STRUC-1** through **STRUC-4** (requiring submittals to the CEC's delegate chief building official [DCBO] for approval) in **Section 4.1, Facility Design**. These COCs include standard engineering design requirements for mitigation of strong seismic shaking, liquefaction, and potential excessive settlement due to dynamic compaction. CEC staff concludes that these COCs would adequately mitigate potentially significant impacts to the project's functional reliability due to seismic shaking.

Landslides and Seiches

Landslides would not be expected to affect the project site with mitigation incorporated. COCs **GEO-1, CIVIL-1, GEN-1**, and **STRUC-1**, would ensure the final design, grading, construction, and operation of the jurisdictional project components would mitigate potential impacts related to mass wasting on human life, property, and grid reliability to less than significant. The topography of the project site and its surroundings is relatively flat (TT 2024a, Section 2.1). See **Section 5.6, Geology, Paleontology, and Minerals**, for further discussion. The project site is not located near a body of water and would not be affected by seiches (TT 2024a, Section 2.1). Therefore, landslides and seiches would not have a significant impact on the reliability of the project.

Floodplains

Floodplains would not be expected to affect the project site. The project is not located within a Federal Emergency Management Agency (FEMA)-designated 100-year floodplain area and is classified as Zone X by FEMA, indicating an area determined to be "outside the 0.2 percent annual chance flood" (TT 2024c, Section 4.10.2.4). Consequently, the risk of flooding at the project site is considered low, and construction and operation would not be subject to significant flood-related hazards (TT 2024c, Section 4.7.2.3).

While the project site has a low risk of flooding, it would be designed and built to provide adequate levels of flood resistance by complying with proposed COCs **CIVIL-1** through **CIVIL-4** (requiring civil engineering submittals to the CEC's DCBO for review and approval) in **Section 4.1, Facility Design**.

Therefore, there are no concerns regarding the project's functional reliability due to flooding.

Subsidence

Subsidence is the gradual settling of the ground surface in response to the movement of material belowground. Natural processes that may cause subsidence include soil

compaction, sinkhole formation, and earthquakes. Artificial activities that may cause subsidence include removal or addition of material belowground, such as groundwater pumping, hydraulic fracturing, mining, and oil extraction.

The project site is not in a location where artificial subsidence has occurred or is occurring (USGS 2018; Solano Collaborative 2025). An evaluation of the proposed project's potential impacts on subsidence rates in the Solano Subbasin is provided in **Section 5.6, Geology, Paleontology, and Minerals**.

Subsidence would not be expected to affect the project site. The project site is located in an area where land subsidence has not been recorded. Moreover, no wells are located immediately adjacent to the project site. The project applicant has proposed possible installation of a well onsite to supplement water supply during construction and temporary land irrigation, but the well would only be used for temporary construction activities. Therefore, the risk of land subsidence during construction and operation would be less than significant with the inclusion of COC **WATER-3** in **Section 5.16, Water Resources**, if the possible well is installed.

While the project site has a low risk of subsidence, it would be designed and built to provide adequate levels of subsidence resistance. See **Section 5.6, Geology, Paleontology, and Minerals**, and **Section 5.16, Water Resources**, for further discussion.

Therefore, there are no concerns regarding the project's functional reliability due to subsidence.

Comparison with Existing Facilities

The equivalent availability factor (availability factor) of a power plant or energy storage system is the amount of time the facility is able to produce electricity over a certain period, divided by the amount of time in the period in which the generation resource is available. The capacity factor is the percentage of time a power generation facility operates at maximum output over a given period.

BESS

The project's BESS would not produce electricity; rather, it would store electricity and return the electricity to the system for future use. The applicant has not provided a specific availability factor; however, the use of a SCADA system for real-time monitoring suggests a high availability, consistent with industry norms of 95 percent or higher for a BESS Facility. This availability factor is higher than most other existing power plant facilities. According to the North American Electric Reliability Corporation (NERC), the average availability factor for all fossil-fueled, hydroelectric, pump storage, geothermal, and nuclear-fueled power plants in North America in 2024 was approximately 82 percent (NERC 2024).

A typical BESS capacity factor is lower than traditional baseload combined-cycle power plant facilities, which average approximately 59 percent, but higher than peak-demand natural gas turbine power plant facilities, which average approximately 12 percent (EIA 2025). In comparison, the NREL 2024 Annual Technology Baseline estimates a capacity factor of approximately 17 percent for utility-scale four-hour battery energy storage systems, based on the assumption of one full charge-discharge cycle per day (NREL 2024).

4.2.3 Project Conformance with Applicable LORS

No federal, state, or local laws, ordinances, regulations, and standards (LORS) related to facility reliability apply to the jurisdictional project components.

4.2.4 Conclusions and Recommendations

Staff concludes that with the incorporation of COCs **CIVIL-1** through **CIVIL-4, GEN-1, GEN-5, STRUC-1** through **STRUC-4**, (see **Section 4.1, Facility Design**) and **GEO-1** (see **Section 5.6, Geology, Paleontology, and Minerals**). The proposed project would be built to operate in a manner consistent with industry norms for reliable operation and would be expected to demonstrate a high availability factor although a lower capacity factor compared to some other facilities within the state. No additional conditions of certification are proposed for facility reliability.

4.2.5 Proposed Conditions of Certification

There are no additional proposed conditions of certification for the project for facility reliability.

4.2.6 Recommended Mitigation Measures

There are no recommended mitigation measures for facility reliability.

4.2.7 References

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

EIA 2025 – U.S. Energy Information Administration (EIA). Electric Power Monthly. Table 6.07.A. Capacity Factors for Utility Scale Generators Primarily Using Fossil Fuels. Accessed on January 2025. Available online at: https://www.eia.gov/electricity/monthly/epm_table_grapher.php?t=epmt_6_07_a

NERC 2024 – North American Electric Reliability Corporation (NERC). Generating Unit Statistical Brochures. Accessed on December 23, 2025. Available online at: https://www.nerc.com/pa/RAPA/gads/Pages/Reports.aspx

NREL 2024 – National Renewable Energy Laboratory (NREL). Annual Technology Baseline Utility-Scale Battery Storage. Accessed on December 12, 2025. Available online at: https://atb.nrel.gov/electricity/2024/utility-scale_battery_storage

4.3 Transmission System Engineering

4.3.1 Setting

The applicant, North Bay Interconnect, LLC and Corby Energy Storage, LLC, proposes to construct, own, and operate the Corby Battery Energy Storage System (BESS) Project (Corby BESS or project). The project would be constructed on an approximately 40.3-acre privately owned parcel in Solano County, California. The project would include a 300-megawatt (MW), 1,200-megawatt-hour (MWh) battery energy storage system (BESS), associated project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, optional groundwater well, water tank, stormwater retention basins, storage containers, and a supervisory control and data acquisition (SCADA) system.

The project would connect to the Pacific Gas & Electric Company (PG&E)'s Vaca-Dixion Substation, northeast of the project site across Interstate (I) 80, via a 1.1-mile long 230 kilovolt (kV) generation tie (gen-tie) line, portions of which would be installed overhead and underground. PG&E would install a new 230-kV double bus bay structure with associated foundations and supports on approximately 0.6 acre of the existing substation. This new Corby Bay would house four switch support structures and associated equipment for the new 230-kV connection. In addition, PG&E would also construct, own, and operate the portion of the gen-tie between the point of change of ownership (POCO) and the new Corby Bay, including 5 of the 10 structures, to connect the project to the Vaca-Dixon Substation (Please refer to **Figure 3-3**, Project Layout, in **Section 3, Project Description**). These project components are regulated by the California Public Utilities Commission (CPUC) and are outside of the California Energy Commission's (CEC) jurisdiction, thus are referred to as "non-jurisdictional project components." This engineering section does not include analysis for the non-jurisdictional project components as they are under the jurisdiction of the CPUC. See "Subsection 2.3, Jurisdictional and Non-Jurisdictional Project Components," in **Section 2, Introduction**, and **Section 3, Project Description** for more details.

Existing Conditions

The project would be located approximately 0.65 miles southeast of the PG&E's Vaca-Dixion substation in Solano County, California. The project parcel is bound on all sides by existing agricultural lands, with a rural residence located across Kilkenny Road directly to the north. The project site is located approximately 250 feet southeast of the City of Vacaville jurisdictional boundary, and approximately 5 miles northeast of the city center. I-80 is approximately 0.6 miles northwest of the project site.

Regulatory

Federal/Regional

- North American Electric Reliability Council Reliability Standards. The North American Electric Reliability Council's (NERC) Reliability Standards for North America's bulk electric transmission systems provide national policies, standards, principles, and guides to assure the adequacy and security of the electric transmission system. NERC is the North American Electric Reliability Organization (ERO), subject to the Federal Energy Regulatory Commission (FERC) oversight. The NERC reliability standards provide system performance levels for normal and contingency conditions. With regard to the power flow and stability simulations, while these standards are similar to NERC and Western Electricity Coordinating Council (WECC) planning standards, certain aspects of the NERC/WECC standards are either more stringent or more specific than the NERC standards for transmission system contingency performance. The NERC's planning standards apply to interconnected system operation and individual service areas (NERC 2024 and ongoing).
- Western Electricity Coordination Council Planning Standards. The WECC Planning Standards are integrated with the NERC Reliability Standards to provide the system performance standards used to assess the reliability of the interconnected system. The first priority of the standards is the uninterrupted continuity of service, and the second priority is the preservation of interconnected operation. Analysis of the WECC system is based, to a large degree, on Section I. Some standards are NERC and WECC Planning Standards with Table I and WECC Disturbance-Performance Table, and on Section I.D, *NERC and WECC Standards for Voltage Support and Reactive Power.* These standards require that the results of power flow and stability simulations verify defined performance levels, including allowable variations in thermal loading, voltage and frequency, as well as the loss of load that could occur on systems during various disturbances (WECC 2014 and ongoing).

State

California Public Utilities Commission

- California Public Utilities Commission (CPUC) General Order 95 (GO-95*), Rules for Overhead Electric Line Construction* (CPUC 2024a)*,* sets forth uniform requirements for the construction of overhead lines. Compliance with this order ensures both adequate service and the safety of the public and the people who build, maintain, and operate overhead electric lines.
- CPUC General Order 128 (GO-128), *Rules for Construction of Underground Electric Supply and Communications Systems* (CPUC 2024b), sets forth uniform requirements and minimum standards for underground supply systems to ensure adequate service and the safety of both the public and the people who build, maintain, and operate underground electric lines.

- CPUC General Order-131E (GO-131E), *Rules Relating to the Planning and Construction of Electric Generation, Transmission/Power/Distribution Line Facilities, and Substation Located in California* (CPUC 2025), specifies application and noticing requirements for new line construction, including EMF reduction.

California Independent System Operator

- California Independent System Operator (California ISO) Planning Standards provide standards and guidelines that assure the adequacy, security, and reliability during the planning process of the California ISO's electric transmission facilities. The California ISO Planning Standards incorporate both NERC and WECC Planning Standards. With regard to power flow and stability simulations, the California ISO's Planning Standards are similar to those of the NERC and WECC and to the NERC Planning Standards for transmission system contingency performance. However, the California ISO's standards provide additional requirements that are not found in the NERC, WECC, or NERC planning standards. The California ISO standards apply to all participating transmission owners that interconnect to both the California ISO-controlled transmission grid and to neighboring grids not operated by the California ISO (California ISO 2023a).
- California ISO and Federal Energy Regulatory Commission (FERC) electric tariffs provide guidelines for the construction of all transmission additions and upgrades (projects) within the California ISO-controlled grid. The California ISO also determines the "need" for the proposed project where it will promote economic efficiency and maintain system reliability. The California ISO also determines the cost responsibility of the proposed project and provides operational review for all facilities that are to be connected to the California ISO grid (California ISO 2024a).

General

- The National Electric Safety Code (NESC), 2023, is a United States standard for the safe installation, operation, and maintenance of electric power and communication utility systems, including power substations, power and communication overhead lines, and power and communication underground lines.

Potential cumulative impacts on the transmission network are identified through the California ISO and utility generator interconnection process. In cases where a significant number of proposed generation projects could affect a particular portion of the transmission grid, the interconnecting utility or the California ISO can study the cluster of projects to identify the most efficient means to interconnect all of them to the transmission grid. The transmission system engineering analysis focuses on whether a proposed project would meet required codes and standards. At all times, the transmission grid must remain in compliance with reliability standards, whether one project or many projects interconnect to it.

4.3.2 Methodology

The California ISO Queue Cluster 9 Phase II PG&E North Interconnection Area Study Report (Phase II Study Report) and California ISO 2021 Generator Interconnection Reassessment Study Report was performed by California ISO in 2017 and 2021 respectively at the project owner's request. The Phase II Study Report identifies the transmission system impacts from the proposed Corby BESS project in PG&E's Queue Cluster 9 and determined mitigation measures needed to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and the California ISO reliability criteria for potential impacts to their system.

Transmission system performance with the addition of the generation projects is evaluated under normal conditions and following the loss of single or multiple Bulk Electricity System (BES) elements as defined by the applicable reliability standards and criteria. **Table 4.3-1** summarizes the contingencies per NERC Reliability Standards, WECC Regional Criteria, and California ISO Planning Standards.

TABLE 4.3-1 CONTINGENCIES

Contingencies	Description
NERC TPL-001-4 Category PO (No contingency)	All facilities in service - Normal Conditions
NERC TPL-001-4 Category P1 Single Contingency	P1.1 - 3Φ Fault with loss of one generator P1.2 - 3Φ Fault with loss of one transmission circuit P1.3 - 3Φ Fault with loss of one transformer P1.4 - 3Φ Fault with loss of one shunt device
NERC TPL-001-4 Category P2 Single Contingency	P2.1.- Loss of one transmission line section without a fault P2.2.- SLG Fault with loss of one bus section P2.3.- SLG Fault with loss of one breaker (internal fault) (non-bus-tie-breaker) P2.4.- SLG Fault with loss of one breaker (internal fault) (bus-tie-breaker)
NERC TPL-001-4 Category P3 Multiple Contingency	Loss of a generator unit followed by system adjustments and the loss of the following: P3.1 - 3Φ Fault with loss of one generator P3.2 - 3Φ Fault with loss of one transmission circuit P3.3 - 3Φ Fault with loss of one transmission circuit P3.4 - 3Φ Fault with loss of one transmission circuit P3.5 - SLG Fault with loss of a single pole of DC lines SLG Fault with loss of both poles of the Pacific DC Intertie (WECC exemption)
NERC TPL-001-4 Category P4 Multiple Contingency	Loss of multiple elements caused by a stuck breaker (non-bus-tie-breaker for P4.1-P4.5 and bus-tie-breaker for P4.6) for attempting to clear a SLG fault on one of the following: P4.1 - generator P4.2 - transmission circuit P4.3 - transformer P4.4 - shunt device P4.5 - bus section P4.6 - bus associated with the bus-tie-breaker

TABLE 4.3-1 CONTINGENCIES

Contingencies	Description
NERC TPL-001-5 Category P5 Multiple Contingency	Delayed fault clearing due to the failure of a non-redundant relay protecting the faulted element to operate as designed, for one of the following: P5.1 - SLG Fault with loss of one generator P5.2 - SLG Fault with loss of one transmission circuit P5.3 - SLG Fault with loss of one transformer P5.4 - SLG Fault with loss of one shunt device P5.5 - SLG Fault with loss of one bus section
NERC TPL-001-4 Category P6 Multiple Contingency	The loss of two or more (non-generator unit) elements with system adjustment between them, which produce the more severe system
NERC TPL-001-4 Category P7 Multiple Contingency	SLG fault with the loss of a common structure as follows: P7.1 - Any two adjacent circuits on common structure[1] P7.2 - Loss of a bipolar DC lines
Other Contingencies - WECC Regional Criteria Adjacent Circuits	The SLG fault with loss of two Adjacent Transmission Circuits[2] according to WECC's Project Coordination, Path Rating and Progress Report Processes.

1 Excludes circuits that share a common structure or common right-of-way for 1 mile or less.
2 https://www.wecc.biz/Reliability/Project Coordination Path Rating and Progress Report Processes 20170316.pdf
"Adjacent Transmission Circuits are two transmission circuits with separation between their center lines less than 250 feet at the point of separation with no Bulk Electric System circuit between them. Transmission circuits that cross, but are otherwise separated by 250 feet or more between their centerlines, are not Adjacent Transmission Circuits. Transmission circuits that are separated by less than 250 feet for no more than three miles, but are otherwise separated by 250 feet or more between their centerlines, are likewise not adjacent circuits."

The interconnection of the generator might impact the utility system and result in incompliance with regulatory reliability requirements. The mitigation measures to ensure this compliance can vary from as little as adjusting the operation of the generator to new transmission lines.

Detailed study assumptions are described in the Phase II Interconnection Study Report. The Steady State Power Flow study assessed the project's impact on the thermal loading of the transmission lines and equipment. The Transient Stability study and the Post-Transient Voltages Stability study were conducted to determine whether the proposed project would create any instability in the system following certain selected outages. The Short Circuit study was conducted with all the transmission upgrades projects and the Proposed project. The Short Circuit study is to evaluate the total fault current at each bus to ensure that circuit breakers are adequately sized according to the required (ANSI/IEEE and NERC) standards.

Thermal and voltage performance of the system was evaluated for base cases under normal (P0), single element outage (P1, P2), and selected multiple element outages (P3-P7).

Normal overloads are those that exceed 100 percent of normal facility rating under Category P0 normal conditions (no contingency). Normal overloads are identified in deliverability assessment and reliability study power flow analyses in accordance with Reliability Standard TPL-001-5. It is required that loading of all transmission system facilities be within their normal ratings under the Category P0 conditions.

Emergency overloads are those that exceed 100 percent of emergency ratings under Category P1 to P7 contingency conditions. Emergency overloads are identified in the deliverability assessment and reliability study power flow analyses in accordance with Reliability Standards TPL-001-5. It is required that loading of all transmission system facilities be within their emergency ratings under the Category P1 to P7 contingency conditions.

All buses within the California ISO Controlled Grid that cannot meet the requirement in **Table 4.3-2** would be further investigated. Exceptions to this voltage standard granted by the California ISO would be observed in the Phase II Study (California ISO 2017b).

TABLE 4.3-2 VOLTAGE CRITERIA

(Bus voltages are relative to the nominal bus voltages of the system under study)

Voltage level*	Normal Conditions (PO)		Contingency Conditions (P1 - P7)		Voltage Deviation ** (Post-Transient)
	Vmin (pu)	Vmax (pu)	Vmin (pu)	Vmax (pu)	P1 and P7
≤ 200 kV	0.95	1.05	0.90	1.1	≤8%
200 kV - 500kV	0.95	1.05	0.90	1.1	<8%
≥500 kV	1.0	1.05	0.90	1.1	<8%

* Most buses have specific requirements per applicable operating procedures. The general Vmin and Vmax in this table applies to buses that do not have operating bus range specified otherwise.
** This voltage deviation criteria is for load buses only

What follows, excerpted from these study reports, constitute the methodology used and identifies thresholds whereby the PG&E determines if the proposed project impacts the reliability of their network and if transmission upgrades are required. The study is designed to determine financial responsibility for transmission upgrades required for the mitigation of reliability impacts.

In the Queue Cluster 9 Phase II Interconnection Study Report, 7 generation projects, including the Corby BESS, totaling 1057 MW were seeking interconnection into the PG&E-owned transmission system.

The power flow study cases were developed from the California ISO transmission expansion base cases series representing the Year of 2021 heavy summer and light load system conditions. The base cases included all California ISO approved transmission projects in the PG&E area that are not yet fully constructed and placed into service, earlier queued Serial Group and cluster generation projects with associated Network Upgrades regardless of in-service date and Remedial Action Schemes (RAS).

The study used forecasted 2021 summer peak load of 28,018 MW (1-in-5 load forecast) and 2021 spring off-peak load of 17,321 MW, approximately 62 percent of the summer peak load.

The Phase II Interconnection Study consists of two major assessments: Power Flow Reliability Assessment and Deliverability Assessment. Scenarios representing the 2021 summer peak and 2021 summer off-peak daytime load conditions were used to evaluate the feasibility of the proposed interconnection and the transmission system impacts of the projects. The on-peak power flow cases for the reliability study use a 1-in-5 year heat wave load level for the PG&E service territory. The deliverability study uses a 1-in-5 year load level.

Reliability Assessment

The PG&E transmission system was monitored. The Power Flow Reliability Assessment included both discharging and charging analysis. The analysis included:

- Steady State Power Flow Analyses
- Steady State Voltage Evaluation
- Short Circuit Duty Analyses
- Transient Stability Evaluation
- Post-Transient Stability Analyses

Deliverability Assessment

The Deliverability Assessment consists of On-Peak Deliverability Assessment and Off-Peak Deliverability Assessments to identify network upgrades required for the proposed project.

4.3.3 Impacts

This analysis evaluates whether the proposed project's interconnection conforms to all laws, ordinances, regulations, and standards (LORS) required for safe and reliable electric power transmission. Additionally, under the California Environmental Quality Act (CEQA), the California Energy Commission (CEC) must conduct an environmental review of the "whole of the action," which may include facilities not licensed by the CEC (Title 14, California Code of Regulations §15378).

For the interconnection of a proposed battery storage or transmission facility to the grid, the interconnecting utility (PG&E in this case) and grid operator, California ISO, is responsible for ensuring the grid's reliability. To ensure grid reliability, PG&E and California ISO determine the transmission system impacts of the proposed project and any mitigation measures needed to ensure system conformance with utility reliability criteria, NERC planning standards, WECC reliability criteria, and the California ISO reliability criteria for potential impacts to their system. California ISO Queue Cluster 9 Phase II PG&E North Interconnection Area Study Report (Phase II Study Report) and

California ISO 2021 Generator Interconnection Reassessment Study Report is used to determine the impacts of the proposed project on the transmission grid. CEC staff relies on California ISO-conducted studies to assess the project's effect on the transmission grid and to identify whether downstream or indirect project impacts would require additional equipment or strategies to bring the transmission network into compliance with applicable reliability standards.

The Interconnection Study Reports analyze the grid, both with and without the proposed project, under conditions specified in the planning standards and reliability criteria. The standards and criteria define the assumptions used in the study and establish the thresholds through which grid reliability is determined. The studies must analyze the impact of the project for the proposed first year of operation, which is thus based upon a forecast of loads, generation, and transmission. Generation and transmission forecasts are established by an interconnection queue. An interconnection queue establishes generation and transmission forecasts. The studies are focused on thermal overloads, voltage deviations, system stability (excessive oscillations in generators and transmission system, voltage collapse, loss of loads, or cascading outages), and short circuit duties.

If these studies show that the project's interconnection could cause the grid to be out of compliance with reliability standards, then the study will identify mitigation alternatives or ways in which the grid could be brought into compliance with reliability standards. When a project connects to the California ISO-controlled grid, both the studies and the mitigation alternatives must be reviewed and approved by the California ISO. If the mitigation identified by the California ISO or interconnecting utility includes transmission modifications or additions that require CEQA review, these additions could be considered part of the "whole of the action," in conjunction with the proposed power plant. The CEC must then analyze the environmental impacts of these modifications or additions.

Project Substation and Interconnection Facilities

The project substation would include two 230/34.5/13.8 kV transformers; one 241.5/34.5/13.8 kV transformer; four 2,000-ampere (A) 230 kV gas circuit breakers; and five 2,000 A, 34.5 kV vacuum circuit breakers, along with buses, switches, surge arresters, and other substation equipment (TT 2024a).

The project would be connected through a 230 kV generation tie line (gen-tie) consisting of overhead and underground portions with a combined length of 1.1 miles to the PG&E's Vaca-Dixion substation. The overhead transmission line would be a single-circuit, three-phase, 230 kV transmission line of three aluminum core, steel-supported (ACSS), size of 1272-kcmil. Ampacity of this cable at 200 degrees Celsius is given as 2,201 Amperes. The overhead transmission line would use towers ranging from 90 to 130 feet in height (TT 2024a, TT 2025b).

The underground portion of the gen-tie includes two proposed route options (Please refer to Figure 3-3, Project Layout). Underground route option 1 would be installed in concrete duct banks 2 feet wide and 3 feet deep crossing under Kilkenny Road, PG&E gas pipelines and other underground constraint using trenchless crossings. Underground route option 2 would be installed via horizontal directional drill within City of Vacaville maintained Kilkenny Road in a duct bank or directly buried in manner similar to underground route option 1. The horizontal directional drilling is planned for a minimum depth of 20 feet below ground. The gen-tie line underground cable type would be a single 5,000 kcmil enameled copper cross-linked polyethylene (XLPE) cable. This cable has 1,952 amperes (A) rating based on a 69 percent daily load factor. About 2300 ft of the gen-tie line would be underground in the ditch as discussed in the project application. After that the gen-tie would transition to overhead transmission line section (TT 2024a, TT 2025b).

PG&E would construct, own, and operate the transmission line from the POCO at pole 6 to the point of interconnect (POI). This would include transmission line crossing over the I-80 and connect to the 230 kV bus at the PG&E's Vaca-Dixion substation. To accommodate the proposed project and other projects in the future, PG&E is performing upgrades within its substation including a new 230 kV double bus bay structure to interconnect the proposed project to the PG&E's substation. The facilities constructed by PG&E would be under the jurisdiction of the CPUC and would be evaluated and licensed through their CEQA process.

Reliability Assessment

At charging mode, battery storage would be required to follow the California ISO's dispatch instructions which could curtail operations.

Steady State Power Flow Study Results

There were no overloads observed due to this project alone on the California ISO's grid. The Project would be required to follow California ISO's dispatch instruction in discharging mode.

Steady State Voltage Results

The project's plant side voltage can experience high voltage of 1.08 pu for summer peak case. California ISO report suggests that plant would need On Load Tap Changer (LTC) transformers to maintain proper voltage due to Vaca-Dixion substation's scheduled voltage (California ISO 2017a).

Short Circuit Study Results and Mitigations

Short Circuit studies were conducted to evaluate the impact of increased fault current resulting from the addition of the proposed Project. The Studies identified short circuit duty violations in the PG&E area and related upgrades.

The study identified Cottonwood 230 kV circuit breakers # 222 and 232 as overstressed. The mitigation is to upgrade these breakers as recommended in California ISO report (California ISO 2017a).

Transient Stability Results

With the proposed congestion management and RAS's in place, the study concluded that the addition of the project would not cause the PG&E transmission system to become unstable.

Post-Transient Stability Results

With the proposed congestion management and RAS's in place, the study concluded that the addition of the project would not result in any post-transient voltage violations. The project would not be responsible for pre-existing post-transient voltage deviations.

Deliverability Assessment

The California ISO Cluster 9 Phase II Study Report recommends upgrading of the Contra Costa 230 kV circuit breaker # 650 (California ISO 2017a).

4.3.4 Project Conformance with Applicable LORS

Table 4.3-3 below details staff's determination of conformance with applicable local, state, and federal LORS, including any proposed Conditions of Certification (COC), where applicable, to ensure the jurisdictional project components would conform with LORS. As shown in this table, staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection at the end of this section, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 4.3-3 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal/Regional	
Federal Energy Regulatory Commission (FERC) /North American Electric Reliability Council (NERC)	**Yes.** The proposed interconnection facilities would comply with Federal/Regional regulations. COC **TSE-5** would require the submittal of any updates to the Large Generator Interconnection Agreement (LGIA) at least 30 days prior to the start of construction of transmission facilities.
NERC/WECC Planning Standards: The Western Electricity Coordinating Council (WECC) Planning Standards	**Yes.** The proposed interconnection facilities would comply with Federal/Regional regulations. COC **TSE-5** would require the submittal of any updates to the LGIA at least 30 days prior to the start of construction of transmission facilities.
State	

TABLE 4.3-3 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
California Public Utilities Commission (CPUC) General Order 95 (GO-95)	**Yes.** The proposed overhead collector lines and gen-tie line would comply with CPUC GO-95. Compliance with COC **TSE-4** requires power plant switchyard, outlet line, and termination compliance with GO-95.
CPUC General Order 128 (GO-128)	**Yes.** The proposed underground collector lines would comply with CPUC GO-128. Compliance with COC **TSE-4** requires power plant switchyard, outlet line, and termination compliance with GO-128.
California ISO Planning	**Yes.** The proposed interconnection of the project would comply with California ISO planning standards. COC **TSE-5** would require the submittal of any updates to the LGIA at least 30 days prior to the start of construction of transmission facilities.
General	
National Electric Safety Code 2023 (NESC)	**Yes.** The proposed overhead collector lines, underground collector lines, and gen-tie line would comply with NESC. Compliance with COC **TSE-4** requires power plant switchyard, outlet line, and termination compliance with NESC.

4.3.5 Electricity Reliability Benefits

One of the problems holding back renewable generation has been the storage of the excess electricity created during hours of low demand. In the past, it meant that excess energy generated from the renewable resources like solar and wind had to be curtailed since there was no practical way to store or otherwise use the excess electricity. Projects like Corby BESS would be able to store that excess energy using its batteries and make it available during peak demand hours, which usually occur later in the day when solar generation diminishes.

The Corby BESS would be able to offer its stored energy to the grid during hours of the peak demand when generation is most needed. This would enhance grid reliability by increasing generation capacity available during the peak demand hours when it's needed the most. The Corby BESS would also help California advance its renewable-energy goals by alleviating the storage bottlenecks that currently limit the use of surplus renewable generation.

The Corby BESS would also be able to provide ancillary services to California ISO and increase operational flexibility and reliability of the grid. These services include frequency regulation, non-spinning reserves, and ramping capability.

4.3.6 Conclusions and Recommendations

As discussed above, implementing the proposed TSE COCs would reliably and safely interconnect the project to the transmission grid. CEC staff recommends adopting the COCs, as detailed in subsection "4.3.7 Proposed Conditions of Certification."

The conditions below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities (the gen-tie line).

The non-jurisdictional project components would be under the jurisdiction of the CPUC and would be evaluated and licensed through their CEQA process and could have additional mitigation measures determined by the CPUC.

4.3.7 Proposed Conditions of Certification

The proposed COCs include measures to conform to applicable LORS and ensure that the project is reliably and safely interconnected to the PG&E transmission grid.

TSE-1 The project owner shall furnish to the Compliance Project Manager (CPM) and the Delegate Chief Building Official (DCBO) with transmission facility design submittals schedule, a Master Drawing List, a Master Specifications List, and a Major Equipment and Structure List. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment. To facilitate audits by CEC staff, the project owner shall provide designated packages to the CPM when requested.

Verification: Before the start of construction, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the DCBO and to the CPM. The schedule shall contain a description and list of proposed submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major equipment in **Table 1**: Major Equipment List below). Additions and deletions shall be made to the table only with CPM and DCBO approval. The project owner shall provide schedule updates in the Monthly Compliance Report.

TABLE 1 MAJOR EQUIPMENT LIST
Breakers
Step-up transformer
Switchyard
Busses
Surge arrestors
Disconnects
Take-off facilities
Electrical control building
Switchyard control building
Transmission pole/tower

TABLE 1 MAJOR EQUIPMENT LIST
Grounding system

TSE-2 Before the start of construction, the project owner shall assign to the project an electrical engineer and at least one of each of the following:

a. a civil engineer;

b. a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering;

c. a design engineer who is either a structural engineer or a civil engineer and fully competent and proficient in the design of power plant structures and equipment supports; or

d. a mechanical engineer (Business and Professions Code Sections 6704 et seq. require state registration to practice as either a civil engineer or a structural engineer in California).

The tasks performed by the civil, geotechnical, mechanical, electrical, or design engineers may be divided between two or more engineers as long as each engineer is responsible for a particular segment of the project, e.g., proposed earthwork, civil structures, power plant structures, or equipment support. No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer. The civil, geotechnical, or civil and design engineer, assigned as required by Facility Design COC **GEN-5**, may be responsible for design and review of the TSE facilities.

The project owner shall submit to the DCBO, for review and approval, the names, qualifications, and registration numbers of all engineers assigned to the project. If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer. This engineer shall be authorized to halt earth work and require changes; if site conditions are unsafe or do not conform with the predicted conditions used as the basis for design of earth work or foundations.

The electrical engineer shall:

1. be responsible for the electrical design of the power plant switchyard, outlet, and termination facilities; and

2. sign and stamp electrical design drawings, plans, specifications, and calculations.

Verification: Before the start of rough grading, the project owner shall submit the names, qualifications, and registration numbers of all the responsible engineers

assigned to the project to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the DCBO for review and approval. The project owner shall notify the CPM of the DCBO's approval of the new engineer within five days of the approval.

TSE-3 If any design and/or construction discrepancy is discovered in any engineering work that has undergone DCBO design review and approval, the project owner shall document the discrepancy and recommend corrective action. The discrepancy documentation shall become a controlled document and shall be submitted to the DCBO for review and approval and refer to this condition of certification.

Verification: The project owner shall submit a copy of the DCBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days of receipt. If disapproved, the project owner shall advise the CPM, within five days, the reason for the disapproval, along with the revised corrective action required to obtain the DCBO's approval.

TSE-4 For the power plant switchyard, outlet line, and termination, the project owner shall begin construction once the DCBO has approved plans for that increment of construction. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the DCBO inspect the installation to ensure compliance with the requirements of applicable LORS. The following activities shall be reported in the monthly compliance report:

a. receipt or delay of major electrical equipment;

b. testing or energization of major electrical equipment; and

c. the number of electrical drawings approved, submitted for approval, and still to be submitted.

Verification: Before the start of each increment of construction, the project owner shall submit to the DCBO for review and approval the final design plans, specifications and calculations for equipment and systems of the power plant switchyard, and outlet line and termination, including a copy of the signed and stamped statement from the responsible electrical engineer verifying compliance with all applicable LORS, and send the CPM a copy of the transmittal letter in the next monthly compliance report.

TSE-5 The project owner shall ensure that the proposed transmission facilities' design, construction, and operation conform to all applicable LORS, and the following

requirements. The project owner shall submit the required number of copies of the design drawings and calculations, as determined by the DCBO. Once approved, the project owner shall inform the CPM and DCBO of any anticipated changes to the design and shall submit a detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change to the CPM and DCBO for review and approval.

a. The power plant outlet line shall meet or exceed the electrical, mechanical, civil, and structural requirements of CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the High Voltage Electric Safety Orders, National Electric Code (NEC) and related industry standards.

b. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.

c. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner's standards.

d. The project conductors shall be sized to accommodate the full output of the project.

e. Termination facilities shall comply with applicable PG&E interconnection standards.

f. The project owner shall provide to the CPM:

   i. The Special Protection System sequencing and timing if applicable,

   ii. A letter stating that the mitigation measures or projects selected by the transmission owners for each reliability criteria violation, for which the project is responsible, are acceptable, if applicable,

   iii. Any updates to the executed LGIA signed by the PG&E and the project owner.

Verification: Prior to the start of construction or start of modification of transmission facilities, the project owner shall submit to the DCBO for approval:

a. Design drawings, specifications, and calculations conforming with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, National Electric Code (NEC) and related industry standards, for the poles/towers, foundations, anchor bolts, conductors, grounding systems, and major switchyard equipment.

b. For each element of the transmission facilities identified above, the submittal package to the DCBO shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on "worst case conditions"[1] and a statement signed and sealed by the registered engineer in responsible

charge, or other acceptable alternative verification, that the transmission element(s) will conform with CPUC General Order 95 or National Electric Safety Code (NESC); Title 8 of the California Code and Regulations (Title 8); Articles 35, 36 and 37 of the *High Voltage Electric Safety Orders*, California ISO standards, National Electric Code (NEC), and related industry standards.

c. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in charge, a route map, and an engineering description of the equipment and configurations covered by requirements COC **TSE-5** a) through f).

d. Generator Special Facilities Agreement shall be provided concurrently to the CPM and DCBO. The project owner shall identify and justify the substitution of equipment and substation configurations for DCBO and CPM approval.

e. Any changes or updates to the executed LGIA signed by the PG&E and the project owner.

f. Before the construction of any project modification requiring approval of the PG&E, provide the interconnection approval to the CPM. Interconnectional approval for modification of existing facilities can be in the form of an approved Material Modification or approval of the proposed changes to project and the existing interconnection facilities. Within 15 days after cessation of construction the project owner shall provide a statement to the CPM from the registered engineer in responsible charge (signed and sealed) that the switchyard and transmission facilities conform to the above listed requirements.

TSE-6 The project owner shall inspect transmission facilities during and after project construction. Any subsequent CPM and DCBO approved changes to it to ensure conformance with CPUC GO-95 or NESC, Title 8, CCR, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", applicable interconnection standards, NEC and related industry standards. In case of non-conformance, the project owner shall inform the CPM and DCBO in writing, within ten days of discovering such non-conformance and describe the corrective actions to be taken.

Verification: Within 60 days after first synchronization of the project, the project owner shall transmit to the CPM and DCBO:

a. "As built" engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC GO-95 or NESC, Title 8, California Code of Regulations, Articles 35, 36 and 37 of the "High Voltage Electric Safety Orders", and applicable interconnection standards, NEC, related industry standards.

b. An "as built" engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge or acceptable alternative verification. "As built"

drawings of the electrical, mechanical, structural, and civil portion of the transmission facilities shall be maintained at the power plant and made available, if requested, for CPM audit as set forth in the "Compliance Monitoring Plan".

4.3.8 Recommended Mitigation Measures

There are no recommended mitigation measures for transmission system engineering.

4.3.9 References

California ISO 2017a – California Independent System Operator (California ISO) (TN 260483). Appendix A-Q1270 Queue Cluster 9 Phase II, filed on November 2, 2024. *Confidential Report on File.*

California ISO 2017b – California Independent System Operator (California ISO) (TN 263002). Queue Cluster 9 Phase II Interconnection Study Report, PG&E North Interconnection Area Study Report, filed on May 1, 2025. *Confidential Report on File.*

California ISO 2021a – California Independent System Operator (California ISO) (TN 263003). 2021 Generator Interconnection Reassessment Study Report, filed on May 1, 2025. *Confidential Report on File.*

California ISO 2023a – California Independent System Operator (California ISO). Grid Planning Standards, February 2, 2023, ongoing.

California ISO 2024a – California Independent System Operator (California ISO). Fifth Replacement FERC Electric Tariff, January 1, 2024, ongoing.

CPUC 2024a – California Public Utilities Commission (CPUC). General Order 95 (GO-95), Rules for Overhead Electric Line Construction. December 2024. Accessed online at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M550/K438/550438485.pdf

CPUC 2024b – California Public Utilities Commission (CPUC). General Order 128 (GO-128), Rules for Construction of Underground Electric Supply and Communications Systems. December 2024. Accessed online at: https://docs.cpuc.ca.gov/PublishedDocs/Published/G000/M558/K715/558715219.pdf

CPUC 2025 – California Public Utilities Commission (CPUC). General Order 131e (GO-131e), Rules Relating to the Planning and Construction of Electric Generation, Transmission/Power/Distribution Line Facilities, and Substation Located in California. January 2025. Accessed online at: https://www.cpuc.ca.gov/-/media/cpuc-website/proceedings-and-rulemaking/documents/general-orders/go-131-e.pdf

NERC 2026 – North American Electric Reliability Council (NERC). Reliability Standards for the Bulk Electric Systems of North America. April 1, 2026. Accessed online

at: https://www.nerc.com/globalassets/standards/reliability-standards/rscompleteset.pdf

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025a – Tetra Tech (TN 262554). Project Description Update. Docketed April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025b – Tetra Tech (TN 262555). Data Request Response #1. Docketed April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025f – Tetra Tech (TN 263283). Project Description Update Addendum. Docketed May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

WECC 2026 – Western Electricity Coordinating Council (WECC). WECC Regional Reliability Standards. Updated 2026 and ongoing. Accessed online at: https://www.wecc.org/program-areas/standards

4.3.10 Definition of Terms

ACSR — Aluminum conductor steel-reinforced

Ampacity — Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations

Ampere — The unit of current flowing in a conductor

Bus — Conductors that serve as a common connection for two or more circuits

Conductor — The part of the transmission line (the wire) that carries the current.

Congestion Management

A scheduling protocol that ensures dispatched generation and transmission loading (imports) will not violate criteria

Double Contingency

Also known as emergency or N-2 condition, occurs when a forced outage of two system elements occurs -- usually (but not exclusively) caused by one single event. Examples of an N-2 contingency include loss of two transmission circuits on single tower line or loss of two elements connected by a common circuit breaker due to the failure of that common breaker

Emergency Overload

See Single Contingency condition. This is also called an N-1.

Kcmil or KCM

Thousand circular mil. A unit of the conductor's cross sectional area; when divided by 1,273, the area in square inches is obtained.

Kilovolt (kV)

A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground

Loop An electrical cul de sac. A transmission configuration that interrupts an existing circuit, diverts it to another connection, and returns it back to the interrupted circuit, thus forming a loop or cul de sac

Megavar One megavolt ampere reactive

Megavars Mega-volt-ampere-reactive. One million volt-ampere-reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system

Megavolt Ampere (MVA)

A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, divided by 1,000

Megawatt (MW)

A unit of power equivalent to 1,341 horsepower

N-0 Condition

See Normal Operation/Normal Overload, below

Normal Operation/ Normal Overload (N-0)

When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating

N-1 Condition

See Single Contingency, below

N-2 Condition

See Double Contingency, above

Outlet Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities with the main grid

Power Flow Analysis

A power flow analysis is a forward-looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers, and other equipment and system voltage levels

Reactive Power

Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system

Remedial Action Scheme

A remedial action scheme is an automatic control provision that, as one example, will trip a selected generating unit when a circuit overloads

Single Contingency

Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service

Special Protection Scheme/System

Detects a transmission outage (either a single or credible multiple contingency) or an overloaded transmission facility and then trips or runs back generation output to avoid potential overloaded facilities or other criteria violations

Switchyard

A power plant switchyard is an integral part of a power plant that is used as an outlet for one or more electric generators

Thermal Rating See ampacity

TSE Transmission System Engineering

4.4 Worker Safety and Fire Protection

This section discusses the existing conditions, regulatory background, and impacts associated with the construction and operation of the project with respect to worker safety and fire protection. The permanent operational facility would be located on an approximately 40.3-acre parcel (project site) southwest of the intersection of Kilkenny Road and Byrnes Road in unincorporated Solano County, California approximately two miles southwest of downtown Dixon. Within the 40.3-acre project site, there would be 341 battery energy storage system (BESS) containers, associated project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, optional groundwater well, water tank, stormwater retention basins, storage containers, and a supervisory control and data acquisition (SCADA) system.

Site access would be provided via three new 24-foot-wide gates and road to Byrnes Road on the eastern project site boundary. One would be dedicated for the project substation and two for the BESS yard. Internal site maintenance roads would also be installed to allow access throughout the project site during operation. All internal roads would be designed to comply with the superseding fire codes, measuring at least 30 feet wide with adequate turnarounds, graveled (or potentially asphalt paved depending upon final design). These access points would be maintained throughout construction and operation of the project to serve as the main points of ingress/egress for workers, emergency personnel, and potential evacuation, if needed.

The Pacific Gas and Electric Company (PG&E) Vaca-Dixon Substation is located approximately 1.8 miles northwest of the project site. A 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line would also be constructed and owned by the applicant, portions of which would be installed overhead and underground. Construction and ownership of the gen-tie line would end at the point of change of ownership (POCO) where PG&E would also construct, own, and operate that portion of the gen-tie between the POCO and the new Corby bay, including additional facilities needed to connect the project to the Vaca-Dixon Substation.

See **Section 3, Project Description**, of this Staff Assessment for a complete description of the jurisdictional project components within the California Energy Commission's (CEC's) Opt-In certification and non-jurisdictional project components.

4.4.1 Environmental Setting

Existing Conditions

Lands immediately surrounding the site are in agricultural use, consistent with the County's Agriculture land use designation and agriculture zoning.

The project would be served primarily by the City of Dixon Fire Department (DFD), which provides fire suppression, hazardous materials, and emergency medical services to the area. DFD has coordinated directly with NextEra and the CEC to define access, detection, notification, water supply, and training requirements.

DFD is backed by strong regional mutual aid agreements with the fire departments of Vacaville, Davis, University of California Davis, and Solano County. DFD Station 81 would serve as the DFD primary responding station, with an estimated 13-minute response time. However, under Mutual Aid with the nearby Vacaville Fire Department (VFD), the initial first responding station would be VFD Station #65, 3.3 miles from the site with an estimated response time of 6 minutes and/or Station #72, 5.4 miles from the site with an estimated response time of 10 minutes. The DFD has indicated that a new fire station, number 82, is being built closer to the site and would be completed in 2 to 3 years. It would have an estimated response time of 8 minutes. Station 82 would be equipped with staff and apparatus from station 81.

Regulatory

Worker safety and fire protection are regulated through the following laws, ordinances, regulations, and standards (LORS), at the federal, state, and local levels.

Federal

Occupational Safety and Health Act. The Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (Title 29, Code of Federal Regulations, Section 1910.95) designed to protect workers. Employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure. The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. These sections from OSHA contain requirements to protect worker health and safety in the general industry and construction industry.

These regulations also address requirements to protect workers in emergency situations. The regulations are designed primarily to protect worker health but also contain requirements that affect general workplace safety. The

administering agencies for the above authority are Federal and Cal OSHA (the California Occupational Safety and Health Administration). As required by Title 8 California Code of Regulations (CCR) 3220, an Emergency Action Plan must be prepared and implemented. (See Condition of Certification [COC] **WORKER SAFETY-1** and **WORKER SAFETY-2**). For those employers with 10 or fewer employees, the plan may be communicated orally to employees and the employer need not maintain a written plan. The Emergency Action Plan must contain procedures for reporting, emergency evacuation, for employees who remain for critical plant operations, to account for employees following evacuation, if rescue and medical duties are required, and for identified persons who can provide more information to employees.

National Institute of Occupational Safety and Health (NIOSH). NIOSH was established by the Occupational Safety and Health Act of 1970. NIOSH studies worker health and safety, develops safe work practices and testing protocols, and makes recommendations to OSHA to continually improve workplace practices.

State

California Occupational Safety and Health Administration. Cal OSHA is the primary agency responsible for worker safety related to the handling and use of chemicals in the workplace. Cal OSHA standards are generally more stringent than federal regulations. Employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure (Title 8, California Code of Regulations (CCR), §§ 337 to 340). The regulations specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. The regulations also include the Construction Safety Orders (Title 8, CCR, §§ 1500 to 1962) and the General Industry Safety Orders (Title 8, CCR, §§ 3200 to 6184). General Industry Safety Orders include but are not limited to heat illness prevention (indoors and outdoors) and protection from wildfire smoke.

National Fire Protection Association (NFPA). The NFPA 855 Standard for the Installation of Stationary Energy Storage Systems (Second Edition – 2023) provides mandatory requirements for, and explanations of, the safety strategies and features of energy storage systems (such as the project BESS). Applying to all energy storage technologies, the standard includes chapters for specific technology classes. While NFPA 855 is a standard and not a code, its provisions are enforced by NFPA 1, Fire Code, in which Chapter 52 provides an outline of requirements along with references to specific sections in NFPA 855. Sections of NFPA 855 (Second Edition – 2023) were incorporated into the California Fire Code (CFC) effective January 1, 2026.

The California Fire Code (CFC). California Health and Safety Code Sections 13145 and 13146 require every city, county, or city and county fire department or district providing fire protection services to enforce building standards adopted by the State Fire Marshal and other regulations of the State Fire Marshal. The CFC was amended in July 2024 to add supplemental regulations (Chapter 12 Energy Systems) governing BESS placement and operations in California. Recent updates to the CFC, effective January 1, 2026, incorporate NFPA 855 (Second Edition – 2023) and its requirements for battery safety, fire protection, and installation.

The California Electrical Code. The California Electrical Code outlines regulations for electrical installations, incorporating the National Electrical Code with California-specific amendments to ensure safety and compliance. The California Electrical Code is based on NFPA 70 with amendments and additions. California Electrical Code, Title 24, Part 3. Requirements for electrical safety, which include the Uniform Electrical Code, Title 24, Part 3, govern electrical installations, including wiring, equipment, grounding, bonding, and overcurrent protection, with the goal of protecting people and property from electrical hazards.

California Public Utilities Code (CPUC) 761.3 Section (g). Senate Bill (SB) 38 (Laird 2023) added safety requirements for battery storage projects. It requires every battery energy storage facility in California to have an emergency response and emergency action plan that covers the premises of the facility and is consistent with emergency action plans in Title 8, CCR. The owner or operator of the facility must coordinate with local emergency management agencies, unified program agencies, and local first responders to develop the plan and must submit the plan to the county and, if applicable, the city where the facility is located.

California Public Utilities Commission's General Order (GO) 167-C. This order establishes standards to enhance safety of Battery Energy Storage Facilities and orders that they are effectively maintained and operated to ensure safe and reliable service.

California Department of Forestry and Fire Protection (CAL FIRE). CAL FIRE firefighters respond to daily emergencies including wildland fires, structure fires, accidents, heart attacks, lost hikers, spills, train wrecks, floods, and earthquakes. They protect over 31 million acres of California's wildlands and provide emergency services in 36 of the state's 58 counties.

California Health and Safety Code, Sections 25500-25541. The California Health and Safety Code, Sections 25500 through 25541 requires local governments to regulate local business storage of hazardous materials in excess of certain quantities. The law also requires that entities storing hazardous

materials be prepared to respond to releases. Those using and storing hazardous materials are required to submit a Hazardous Materials Business Plan (HMBP) to their local Certified Unified Program Agency (CUPA) and to report releases to their CUPA and the State Office of Emergency Services.

Local

Solano County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The Solano County MJHMP (Solano County 2022) establishes an emergency management organization and assigns functions and tasks consistent with California's Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). It provides for the integration and coordination of planning efforts of Solano County Operational Area and serves as the primary planning document for the identification of hazard risk and the provision of financial and technical resources for hazard mitigation.

Solano County General Plan. The Solano County General Plan (Solano County 2008), adopted by the board of supervisors in 2008, as amended, is the guide for both land development and conservation in the unincorporated portions of the county.

The following goals and policies in General Plan Chapter 5, Public Health & Safety, are relevant to this analysis (Solano County 2008).

Goal HS.G-4: Ensures that Solano County is safe from risks to public health that could result from exposure to hazardous materials.

Policy HS.P-31 through **HS.P-48** Fire Hazards: Outlines policies, standards and programs related to fire hazards.

Policy HS.P-49 through **HS.P-54** Hazardous Materials: Outlines policies, standards and programs related to hazardous waste and materials.

Policy HS.P-55 through **HS.P-65** Emergency Preparedness and Response: Outlines policies, standards and programs related to emergency preparation and response.

Policy HS.P-90 through **HS.P-94** Noise: Outlines policies, standards and programs related to noise.

Solano County Ordinance 2024-1852-U-E Amendment No. 1. On August 26, 2025, the Solano County Board of Supervisors unanimously adopted an amended interim ordinance regulating BESS facilities, specifically allowing them in industrial/manufacturing zones while maintaining restrictions elsewhere. The ordinance imposes strict safety and siting standards, addressing fire risks and updating, but not lifting, the previous moratorium, continuing to disallow BESS on agricultural land.

Ordinances Addressing BESS Projects In California. In an effort to address the impacts of a BESS fire, several jurisdictions in California have implemented code- and ordinance-required setback distances defining the minimum allowable distance between a BESS and nearby equipment, buildings, structures, or property lines (GO-Biz 2025). These are defined by the California Fire Code (Title 24, California Code of Regulations, Part 9), which adopts by reference the National Fire Protection Association 855 standard, or by municipalities in their local land use/development or zoning regulations. These local setback requirements vary from less than 100 feet up to 1,000 feet. **Table 4.4-1** provides a summary of current BESS setback distances, with some adopted and others in current draft versions. Each municipality may also provide a unique definition of BESS, based on technology, total energy capacity, or other characteristics. Some municipalities, such as City of Moorpark, City of Escondido, and City of San Juan Capistrano, have implemented moratoriums on new BESS systems. Note that the distance from the nearest BESS unit at the Corby site to the closest property line of a residence would be 880 feet.

In the case of an emergency incident response, the United States (U.S.) Environmental Protection Agency (U.S. EPA) recommends an isolation zone during the incident. The U.S. Department of Transportation (DOT) Emergency Response Guidebook (EPA 2025; DOT 2024) also presents isolation zones. These zones are both also compiled in **Table 4.4-1**.

NFPA 855 requires for most BESS projects (unless explicitly exempted in technology-specific chapters), the development of a Hazard Mitigation Analysis (HMA) that can provide data on the potential dispersion of toxic emissions based on off-gassing and fire scenarios, battery chemistry, and local environmental conditions. It is a requirement for the Corby BESS project. HMA air dispersion modeling of calculated theoretical upper-bound release events, such as those presented and used by CEC staff in **Appendix D, Dispersion and Frequency Analysis**, can predict the maximum distance that harmful concentrations of airborne pollutants may travel. This type of modeling can be used by regulatory agencies or by local fire authorities to evaluate and implement setback distances to nearby populations and sensitive receptors (GO-Biz 2025). The applicant also prepared an HMA on January 15, 2026 (TT 2026e).

TABLE 4.4-1 SUMMARY OF BESS SETBACK DISTANCES

Location	Distance (feet)	Definition	Note
CA Fire Code Adopted, 2025 As per NFPA 855	10	Clearances to Exposures	1
	100	Defined as remote Outdoor Installations	
Solano County, CA Code 28.78.20.B.9 Adopted, 8/26/2025	50-100	Minimum Setback from the Rear, Side and Front Property Lines to the First BESS Module	2
	300	Minimum Distance of a BESS Module from Any Existing Sensitive Receptor	
City of Vacaville, CA File No 24-059 Adopted, 3/10/2026	500	Minimum Setback (Measured from Property Line or Back of Sidewalk) from Residentially Zoned Property and Parcels Developed with Sensitive Receptors	3
Santa Cruz County, CA Code 13.10.408 Draft, 1/16/2026*	100	Minimum Distance from All Exterior Roadways and Property Lines, Except from Transmission Substation Boundary	4
	300	The minimum distance of an energy storage module from any existing sensitive receptor, as defined in California Health and Safety Code Section 42705.5(a)(5)	
	1,000	Distance from Any Parcel Containing a Hospital, School, Commercial Day Care Center, or Residential Care Facility for the Elderly	
City of Rancho Cucamonga, CA Code 17.109 Adopted, 2/6/2026	1,000	Minimum Distance from Residentially Zoned Properties as Measured from the Nearest Point of Each Parcel Boundary	5
Various: Alameda County Orange County San Diego County* City of San Marcos	100 or less	Distance from Any Community Buildings and Residential Uses as Measured from the Property Line	6, 7, 8, 9
Los Angeles (LA) County	10 or case-by-case basis	LA County is updating its Renewable Energy Ordinance and will address setbacks	12
EPA On-scene Coordinator Response Guide	330	Isolation zone: Evacuate the areas in all directions	10
Emergency Response Guidebook 2024, Guide 147	a) 75 b) 1640 (500m)	For First Responders during a transportation accident. a) Immediate precaution	11

TABLE 4.4-1 SUMMARY OF BESS SETBACK DISTANCES			
Location	**Distance (feet)**	**Definition**	**Note**
		b) Fire: isolate in all directions	

Note 1: 2025 CFC Section 1207.8 (based on NFPA 855 2023 Edition Chapter 9)
Note 2: https://www.solanocounty.gov/government/resource-management/planning-services/environmental-management-sustainability/battery-energy-storage-systems
Note 3: https://www.cityofvacaville.gov/residents/talk-of-the-town/battery-energy-storage-systems
Note 4: https://cdi.santacruzcountyca.gov/UPC/GetInvolved/MajorProjectApplications/BatteryEnergyStorageSystemsOrdinance.aspx
Note 5: https://ecode360.com/45989304
Note 6: https://pwds.oc.gov/service-areas/oc-development-services/planning-development/current-projects/all-districts-5
Note 7: https://engage.sandiegocounty.gov/battery-energy-storage-systems
Note 8: https://www.acgov.org/cda/planning/landuseprojects/documents/StatementofPolicyFINAL32822.pdf
Note 9: https://www.sanmarcosca.gov/files/assets/city/v/1/public-safety/fire-department/documents/fire-prevention-standards-amp-forms/san-marcos-bess-guidelines-v22026.pdf
Note 10: https://www.epa.gov/electronics-batteries-management/battery-energy-storage-systems-main-considerations-safe
Note 11: https://www.phmsa.dot.gov/sites/phmsa.dot.gov/files/2024-04/ERG2024-Eng-Web-a.pdf
Note 12: https://planning.lacounty.gov/long-range-planning/reo-update/
* Draft stage

Cumulative Setting

CEC staff reviewed the potential for the construction and operation of the project combined with existing baseline and expected new major energy projects in the project vicinity to determine impacts on the fire and emergency service capabilities of the DFD (**Appendix A, Table A-1**). Of these projects, CEC staff identified the Vaca Dixon Power Center Project (docket number 26-OPT-01) as the sole energy-related project that could cause a cumulative impact to the DFD.

4.4.2 Impacts

Workers at the proposed Corby facility would operate equipment and handle hazardous materials and may face hazards that can result in accidents and serious injury. Protective measures are employed to eliminate or reduce these hazards or to minimize the risk through special training, protective equipment, and procedural controls.

The purpose of this analysis is to assess whether the worker safety and fire protection measures proposed by the applicant are adequate to:

- comply with applicable safety LORS;

- protect the workers during construction, commissioning, and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

Worker Safety

Industrial environments are potentially dangerous during construction, commissioning, operation, and decommissioning of facilities. Workers at the proposed project would be exposed to loud noises, moving equipment, trenching/excavation accidents, electrical hazards, battery fires, and herbicides during and after applications. The workers could experience falls, trips, burns, lacerations, being struck by objects, and numerous other potential injuries. Well-defined policies and procedures, training, and hazard recognition and control at the facility are important to minimize such hazards and protect workers. Compliance with applicable LORS would help ensure workers are adequately protected from health and safety hazards. The most significant hazards posed to workers during construction of this project could be during trenching, excavation, trips and falls from ladders and scaffolding, electrical shocks, and small trash fires. Once the battery energy storage systems arrive on the site, the most significant hazard could be a battery undergoing thermal runaway, a battery fire, or a deflagration (a small explosion). Workers could then be exposed to toxic air contaminants (TACs) that would off-gas when a battery cell accidentally heats up due to an electrical short, an insult, or other event, or it heats up and starts a thermal runaway or fire. Additionally, hazards of electrical shock could occur from low and high voltage electrical components.

A Construction Health and Safety Program (COC **WORKER SAFETY-1**) and an Operations and Maintenance Health and Safety Program (COC **WORKER SAFETY-2**) would be prepared by the applicant to minimize worker hazards during construction and operation. CEC staff uses the phrase “Health and Safety Program” to refer to the measures that would be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

Construction Health and Safety Program

The project encompasses construction and operation of a BESS, power inverters and transformers, a project substation, and an ancillary building. If an incident occurred, workers could be exposed to hazards including physical, chemical, biological and general construction hazards.

Construction Safety Orders applicable to project construction are promulgated by Cal OSHA and are published at CCR, Title 8, Section 1502, et seq. The

Construction Safety and Health Program would include the following major programs:

- Construction Injury and Illness Prevention Program (CCR, tit. 8, § 1509);
- Construction Heat Illness Prevention Plan (CCR, tit. 8, § 3395);
- Construction Fire Prevention Plan (CCR, tit. 8, § 1920);
- Personal Protective Equipment Program (CCR, tit. 8, § 1514 to 1522); and
- Construction Emergency Action Plan (CCR, tit. 8, § 3220).

Additional safety and health requirements that are part of a Construction Safety Program are found in CCR, Title 8, §§ 3200 to 6184), and in the Electrical Safety Orders (CCR, Title 8, §§ 2299 to 2589 and 2700 to 2989).

The application adequately outlined the Construction Health and Safety Program for the project. However, outlining the appropriate elements of the plan does not ensure compliance with the program. Therefore, CEC staff proposes COC **WORKER SAFETY-1**, which would require the project owner to identify and provide the required elements and detailed plans of the Construction Health and Safety Program to the Compliance Project Manager (CPM) for approval and to the DFD for review and comment prior to the start of construction of the project.

Operations Health and Safety Program

Prior to the start of Project commissioning and operations, an Operations and Maintenance Safety and Health Program would be prepared to include the following major programs and plans:

- Injury and Illness Prevention Program (CCR, tit. 8, § 3203);
- Fire Protection and Prevention Program (CCR, tit. 8, § 3221);
- Fire Protection System Impairment Program (2020 National Fire Protection Association (NFPA) 850, § 17.4.2; & Chapter 9 CFC, §§ 901.7, 901.7.1-901.7.6);
- Personal Protective Equipment Program (CCR, tit. 8, §§ 3401 to 3411); and
- Emergency Action Plan (CCR, tit. 8, § 3220).

The HMBP and Spill Prevention Control and Countermeasure (SPCC) Plan are required through COC **HAZ-1** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**. Additionally, the requirements under General Industry Safety Orders (CCR, tit. 8, §§ 3200 to 6184) and Electrical Safety Orders (CCR, tit. 8, §§ 2299 to 2974) would be applicable to this project. In addition, the use of herbicides to control vegetation growth near the BESS would require adherence to 8 CCR § 5155 and other relevant sections regarding worker exposure to toxic substances.

The application also adequately outlined the Operations and Maintenance Safety and Health Program for the project. However, outlining the appropriate elements of the plan does not ensure compliance with the program. Therefore, CEC staff proposes COC **WORKER SAFETY-2** which would make it a requirement to identify and provide elements and detailed plans of the Operations Health and Safety Program to the CPM for approval and to the DFD for review and comment prior to the start of construction of the project.

The measures in these plans would be derived from applicable sections of state and federal law. Both safety and health programs would comprise seven more specific programs and would require the major items detailed in the following paragraphs.

Injury and Illness Prevention Program. The Injury and Illness Prevention Program (IIPP) is a key worker safety and health program that identifies the person(s) with authority and responsibility for implementing the program, ensures that employees utilize safe and healthy work practices, identifies and evaluates workplace hazards and corrects them, and implements an employee training program. The IIPP shall also include a Construction Heat Illness Prevention Plan in accordance with Title 8 CCR, § 3395.

CEC staff proposes that the applicant submit a final IIPP to the CPM for review and approval to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Fire Prevention Plan. CCR requires an Operations Fire Prevention Plan (CCR, tit. 8, § 3221). This regulation applies to all fire prevention plans required in the State of California and the requirements are detailed below:

(a) Scope and Application. This section applies to all fire prevention plans. The fire prevention plan shall be in writing, except as provided in the last sentence of subsection (d)(2) of this section.

(b) Elements. The following elements, at a minimum, shall be included in the fire prevention plan:

  (1) Potential fire hazards and their proper handling and storage procedures, potential ignition sources (such as welding, smoking and others) and their control procedures, and the type of fire protection equipment or systems which can control a fire involving them;

  (2) Names or regular job titles of those responsible for maintenance of equipment and systems installed to prevent or control ignitions or fires; and

  (3) Names or regular job titles of those responsible for the control of accumulation of flammable or combustible waste materials.

(c) Housekeeping. The employer shall control accumulations of flammable and combustible waste materials and residues so that they do not contribute to a fire emergency. The housekeeping procedures shall be included in the written fire prevention plan.

(d) Training:

(1) The employer shall apprise employees of the fire hazards of the materials and processes to which they are exposed; and

(2) The employer shall review with each employee upon initial assignment those parts of the fire prevention plan which the employee must know to protect the employee in the event of an emergency. The written plan shall be kept in the workplace and made available for employee review. For those employers with 10 or fewer employees, the plan may be communicated orally to employees and the employer need not maintain a written plan.

(e) Maintenance. The employer shall regularly and properly maintain, according to established procedures, equipment and systems installed in the workplace to prevent accidental ignition of combustible materials.

Staff proposes that the applicant submit a final Fire Prevention Plan to the CPM for review and approval and to the DFD for review and comment to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Fire Protection System Impairment Program. National Fire Protection Association (NFPA) 850 (Standard for Fire Protection for Electric Generating Plants and High-Voltage Direct Current [HVDC] Converter Stations) and the most current CFC lay out a prescriptive method that the project owner must follow when the facility's installed fire protection system is impaired. The plan would accomplish the following:

- supervise the safe shutdown of fire protection systems;
- provide notifications to the proper authorities and representatives;
- control potential fire hazards during the impairments through the use of fire watches and/or evacuation of the area effected;
- outline a repair strategy and timeline to get the fire protection system operational; and
- restore the fire protection system to service as soon as possible.

A Fire Protection System Impairment Program would ensure that the project owner follows the prescriptive measures laid out in NFPA 850 and the CFC. Therefore, CEC staff proposes that the applicant submit a final Fire Protection System Impairment Program to the CPM for review and approval, and to the DFD for review and comment, to satisfy proposed COC **WORKER SAFETY-2**.

Personal Protective Equipment Program. California regulations require Personal Protective Equipment (PPE) and first aid supplies whenever hazards are present that, due to process, environment, chemicals or mechanical irritants, can cause injury or impair bodily function as a result of absorption, inhalation, or physical contact (CCR, tit. 8, §§ 3380 to 3400).

All safety equipment must meet NIOSH or American National Standards Institute (ANSI) standards and would carry markings, numbers, or certificates of approval. Respirators must meet NIOSH and Cal OSHA standards. Each employee must be provided with the following information pertaining to, among other requirements, the use and maintenance of protective clothing, when to use the protective equipment, and when and how to replace the protective clothing and equipment.

The PPE Program ensures that employers comply with the applicable requirements for PPE and provides employees with the information and training necessary to protect them from potential workplace hazards.

CEC staff proposes that the applicant submit a final PPE Program to the CPM for review and approval to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Emergency Action Plan. California regulations require an Emergency Action Plan (CCR, tit. 8, § 3220). An Emergency Action Plan must be designed to accomplish the following:

- establish emergency escape procedures and emergency escape routes for the facility;
- determine procedures to be followed by employees who remain to operate critical project operations before they evacuate;
- provide procedures to account for all employees and visitors after emergency evacuation of the project has been completed;
- specify rescue and medical duties for assigned employees;
- identify fire and emergency reporting procedures to regulatory agencies;
- develop alarm and communication system for the facility;
- establish a list of personnel to contact for information on the plan contents; and
- determine and establish training and instruction requirements and programs.

CEC staff proposes that the applicant submit a final Emergency Action Plan to the CPM for review and approval and to the DFD for review and comment to satisfy proposed COC **WORKER SAFETY-1** and COC **WORKER SAFETY-2**.

Hazardous Materials Business Plan. The California Hazardous Materials Release Response Plan and Inventory Law requires businesses that store or use hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) and submit it to the CUPA. An HMBP includes details of a facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course. Workers and first responders to any fire, rescue, or EMS emergency are thus aware of what hazardous materials are on the site and what precautions to take to avoid exposure. CEC staff proposes that the applicant implement the HMBP through COC **HAZ-1** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**.

Spill Prevention, Control and Countermeasure Plan (SPCC Plan). The aboveground petroleum storage act (ASPA) program requires tank facilities storing greater than 1,320 gallons of petroleum (crude oil, motor oil, diesel fuel, gasoline) to develop and implement the SPCC Plan requirements. A tank facility is any tank or tanks that are aboveground, including connected piping, that contain petroleum, have secondary containment, and is used to hold petroleum products. The CUPA regulates businesses within its district. Workers and first responders to any fire, rescue, or EMS emergency are thus aware of what petroleum products are on the site and what precautions to take to avoid exposure due to the flammability, explosivity, and toxicity of these products. A SPPC Plan would limit the size of a spill and thus decrease risk to workers. CEC staff proposes that the applicant implement the SPCC Plan through COC **HAZ-1** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**.

Additional LORS called *safe work practices* apply to the project. The construction and operations safety programs would address safe work practices. The components of these programs include, but are not limited to, the programs found in the subsection “Construction Health and Safety Program.”

Health and Safety Program Monitoring

Protecting construction workers from hazards is among the greatest challenges in occupational safety and health. These hazards increase in complexity in the multi-employer worksites typical of large, complex, industrial-type projects such as the placement and wiring of a large BESS, especially in the presence of BESS units that arrive with 30 percent or greater state of charge. The standard industry practice of hiring a Construction Safety Supervisor is used to ensure a safe environment for personnel. This industry standard practice has reduced or eliminated hazards evident in the audits staff conducted of projects under construction. The federal OSHA has also entered into strategic alliances with several professional and trade organizations to promote and recognize safety professionals trained as Construction Safety Supervisors, Construction Health and

Safety Officers, and other professional designations. The goals of these partnerships are to encourage construction subcontractors in four areas:

- to improve their health and safety performance;
- to assist them in striving for the elimination of the four hazards (falls, electrical, caught-in or-between, and struck-by hazards), which account for the majority of fatalities and injuries in this industry and have been the focus of targeted OSHA inspections;
- to prevent serious accidents in the construction industry through implementation of enhanced safety and health programs and increased employee training; and
- to recognize those subcontractors with exemplary safety and health programs.

To date, there are no OSHA or Cal OSHA requirements that an employer hire or provide for a Construction Safety Officer. OSHA and Cal OSHA regulations do, however, require that safety be provided by an employer and the term *Competent Person* is used in many OSHA and Cal OSHA standards, documents, and directives. A Competent Person is usually defined by OSHA as an individual who, by way of training or experience, is knowledgeable of standards, is capable of identifying workplace hazards relating to the specific operations, is designated by the employer, and has authority to take appropriate action. Therefore, to meet the intent of the OSHA standard to provide for a safe workplace during construction, CEC staff proposes COC **WORKER SAFETY-3**, which would require the project owner to designate and provide a site Construction Safety Supervisor (CSS).

Accidents, fires, and worker deaths are known to have occurred in the past due to the failure to recognize and control safety hazards and the inability to adequately supervise compliance with occupational safety and health regulations. Safety problems have been documented by CEC compliance staff in safety audits conducted at several projects under construction. Commonly documented findings include, but are not limited to, such safety oversights as:

- lack of posted confined space warning placards/signs;
- confusing and/or inadequate electrical and machinery lockout/tagout permitting and procedures;
- confusing and/or inappropriate procedures for handing over lockout/tagout and confined space permits from the construction team to commissioning team and then to operations;
- dangerous placement of hydraulic elevated platforms under each other;
- inappropriate placement of fire extinguishers near hot work;

- dangerous placement of numerous power cords in standing water on the site, thus increasing the risk of electrocution;
- inappropriate and unsecured placement of above-ground natural gas pipelines inside the facility, but too close to the perimeter fence; and
- lack of adequate employee- or contractor-written training programs addressing proper procedures to follow in the event of finding suspicious packages or objects either on or off site.

To reduce or eliminate these hazards, it is necessary for the CEC to have a professional Safety Monitor available to do on-site verification checks of ongoing compliance with Cal OSHA regulations and periodically audit safety compliance during construction, commissioning, and the hand-over to operational status. These requirements are outlined in COC **WORKER SAFETY-4**. A Safety Monitor, hired by the project owner, yet reporting to the Delegate Chief Building Official (DCBO) and CPM, would serve as an "extra set of eyes" to ensure that safety procedures and practices are fully implemented at all projects certified by the CEC.

Health Hazards

CEC staff reviewed the potential for existing conditions or site activities to pose a health hazard during construction and operation. Potential contaminants in the soil could cause health hazards during trenching, excavation, and grading due to inhalation of dust during construction and operations. A Phase I Environmental Site Assessment (ESA) was conducted and demonstrated that the levels of soil contaminants found are below levels that would cause harm and thus potential risks to workers are less than significant (see **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**). This section noted that historic agricultural use of the property may have resulted in the presence of residual agrichemical constituents, including organochlorine compounds and metals, in surficial soils. Given the proposed commercial or industrial use of the subject property, "concentrations of the residual agrichemical constituents are considered likely to be below applicable risk-based regulatory levels; but their potential presence should be considered when evaluating potential risks." Recognized Environmental Conditions (RECs) were not identified in association with the project site. However, workers could be exposed to unknown environmental contamination while trenching or excavating soil on the project site. To mitigate the potential impacts from unknown environmental contamination, CEC staff proposed COCs **HAZ-6, HAZ-7, HAZ-8** and **HAZ-11** to require a Soils Sampling and Analysis Plan (SAP), a Phase II ESA, a Soils Management Plan (SMP), and a professional engineer or professional geologist be available for consultation if contamination is discovered during ground disturbing activities. Staff found that this mitigation would ensure that any

impacts from unknown environmental contamination would be less than significant.

There is also the potential for a soil fungus to cause Valley Fever in exposed workers due to the increase in fungal growth caused by climate change. Valley Fever is a risk in Solano County, and while this disease is primarily associated with the southern San Joaquin Valley, cases are on the rise in Northern California, including Solano County (MMWR 2020). The county is considered a moderate-incidence region, with cases occurring throughout the county, making it a risk for those who live or work there. The fungus that causes Valley Fever (Coccidioides immitis) lives in the soil, and spores become airborne when the soil is disturbed by activities like construction, farming, or high winds. Solano County has reported active cases, with 19 cases documented in the region as of September 2025 (CDPH 2025). Scientists believe that climate change leading to decreased rainfall and potential extended periods of drought have contributed to this increase. Workers involved in soil disturbances in Solano County should be aware of the disease, especially when dusty, hot, and dry conditions are present. To ensure that on-site workers during construction activities are protected, CEC staff recommends adoption of COC **WORKER SAFETY-9** which contains worker protections required by Cal OSHA (Cal OSHA 2024), the California Labor Code (CLC 2024) and recommendations by the California Department of Public Health (CDPH 2025).

Fire Protection

During construction, commissioning, and operation of the project, there is the potential for both small fires and major structural fires. Electrical sparks and shorts, combustion of hydraulic fluid, mineral oil, insulating fluid, or flammable liquids and fuels, explosions, and over-heated equipment, could cause small fires or larger ones at the BESS location. The specific fire hazards for each project component are discussed in more detail below. During commissioning and operations, the greatest hazard posed to workers on the site would be a BESS fire (discussed in-depth below). Even though the project would be remotely monitored and managed, occasional on-site maintenance would be required that would necessitate workers coming to the site.

Operations and Maintenance Facilities

The on-site structures would include battery enclosures, inverter and transformer skids, a collector substation, and an operations and maintenance (O&M) building that would house the SCADA system located near the substation. Fire detection for the O&M building, which would be an enclosure of approximately 14 feet by 60 feet, and other ancillary structures, would be utilized or may not be required due to size and lack of habitability. Initially, the project site would include 303 un-occupiable BESS enclosures, and 101 un-occupiable inverters, and would later expand to 341 BESS enclosures and 114 inverters over the lifetime of the

project. Structures on the project site also include a telecommunications cabinet, and a project substation consisting of three generator step-up transformers, and microwave tower within substation area.

Fires and explosions of flammable gases or liquids are rare. Compliance with applicable LORS would be adequate to ensure protection from fire hazards related to the individual structures. The project owner plans to undertake fire prevention practices during construction and operations and prepare a project-specific Fire Prevention Plan. Access to the site for fire and other emergency vehicles would be available at three separate locations via locked gates (TT 2026g, Section 2.3.2.6; also see Figure 2-1). Emergency departments such as the DFD, the Solano County Sheriff, and the California Highway Patrol shall be given access to the locked gates via keys or any other means as described in both the construction and operations fire prevention plans described in COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**.

BESS Facility

Energy Storage Technology Overview

The power generation industry is progressing energy resources that are not based on fossil fuels such as photovoltaic power, wind power, and BESS, among other energy storage methods. BESS can provide fast and steady response, adaptability, controllability, and geographical independence. Battery technologies for energy storage have varying chemistries and energy densities which include lead-acid, lithium-ion, nickel-cadmium, nickel-metal hydride, sodium-sulfur, and vanadium-redox. Lithium-ion batteries have one of the highest energy densities and are the primary battery chemistry used by manufacturers such as Tesla, LG, and CATL.

Lithium-ion batteries are the predominant chemistry used in utility-scale BESS (defined as larger than 50 MW) throughout the United States (U.S.) and are anticipated to remain so for the next decade. Data shows that in the U.S. by the end of 2022, about 9 GW of energy storage has been added to the U.S. grid since 2010 (DOE National Renewable Energy Laboratory 2023). Of the new storage capacity, more than 90 percent has a duration of 4 hours or less, and in the last few years, lithium-ion batteries have provided about 99 percent of new capacity (DOE National Renewable Energy Laboratory 2023). This demonstrates that for grid-scale BESS, lithium-ion batteries are the nearly exclusive stationary energy storage technology currently being deployed.

There are several types of lithium-ion chemistries, but two types are used extensively in BESS. The first one is lithium nickel manganese cobalt (NMC) and the second is lithium iron phosphate (LFP). Initially, the industry relied on the lithium NMC batteries for utility-scale BESS. However, between 2021 and 2023,

the industry started shifting to LFP batteries for an array of reasons, including cost competitiveness (Investment Recovery Association 2026). Lithium NMC batteries typically have higher energy density and smaller size units compared to LFP batteries, which means they can store more energy in a smaller package. Yet the current NMC technology is not as thermally stable as LFP batteries thus leading to a greater risk of thermal runaway and battery fires. By 2024, LFP emerged as the undisputed standard, accounting for over 90 percent of all grid-scale battery energy storage systems (BESS) deployed across the country (Investment Recovery Association 2026).

LFP batteries have greater safety and thermal stability compared to current NMC batteries due to their lithium iron phosphate ($LiFePO_4$) chemical structure (Brand, M., 2013; Evlithium 2025; Tran, M-K, 2021). They are less prone to thermal runaway and combustion, provide a significantly longer cycle life, and are considered more environmentally friendly due to their relatively non-toxic constituents and readily available raw materials. As of December 2023, no deaths have resulted from a BESS fire at a utility-scale facility in California or the United States (American Clean Power Association 2023).

The Corby Project BESS

The project has proposed the use of LG Energy Solution's (LGES) JF2 DC LINK 5.1 LFP batteries for energy storage. These units are large, prefabricated enclosures similar in size to standard ocean-shipping containers and contain multiple battery modules and cells. Each enclosure measures approximately 23.5 feet long, 8.4 feet wide, 9.5 feet high, and weighs up to 96,000 pounds (≈43,500 kilograms) when fully equipped.

Each battery cell is the fundamental energy-producing component and uses lithium-iron phosphate (LFP) as the cathode material, typically graphite as the anode, and an electrolyte composed of a lithium salt solution (typically lithium hexafluorophosphate, $LiPF_6$, in an organic solvent). Cells are assembled into modules (with 120 cells per module), 14 modules are configured into a rack, and two racks are integrated within each LG M-LINK enclosure. The JF2 DC LINK contains three M-LINK enclosures which collectively form the complete energy storage unit for the project (see **Figure 4.4-1**).

Safety features in the form of engineering controls of the LG BESS units would include flammable gas detectors in each unit which would activate explosion-proof fans and rooftop vents to remove dangerous concentrations of gas, a fire alarm control panel (FACP), smoke detector, and two horn and strobe devices (for gas and for fire) for each unit. Each container, which holds three units, will also have an additional smoke and gas detector in each. Signals from these detectors in each M-LINK enclosure are transmitted to the FACP, and then

relayed to the FCC (Fire Command Center) as per NFPA 72 and UL 864. Additional safety features include the following:

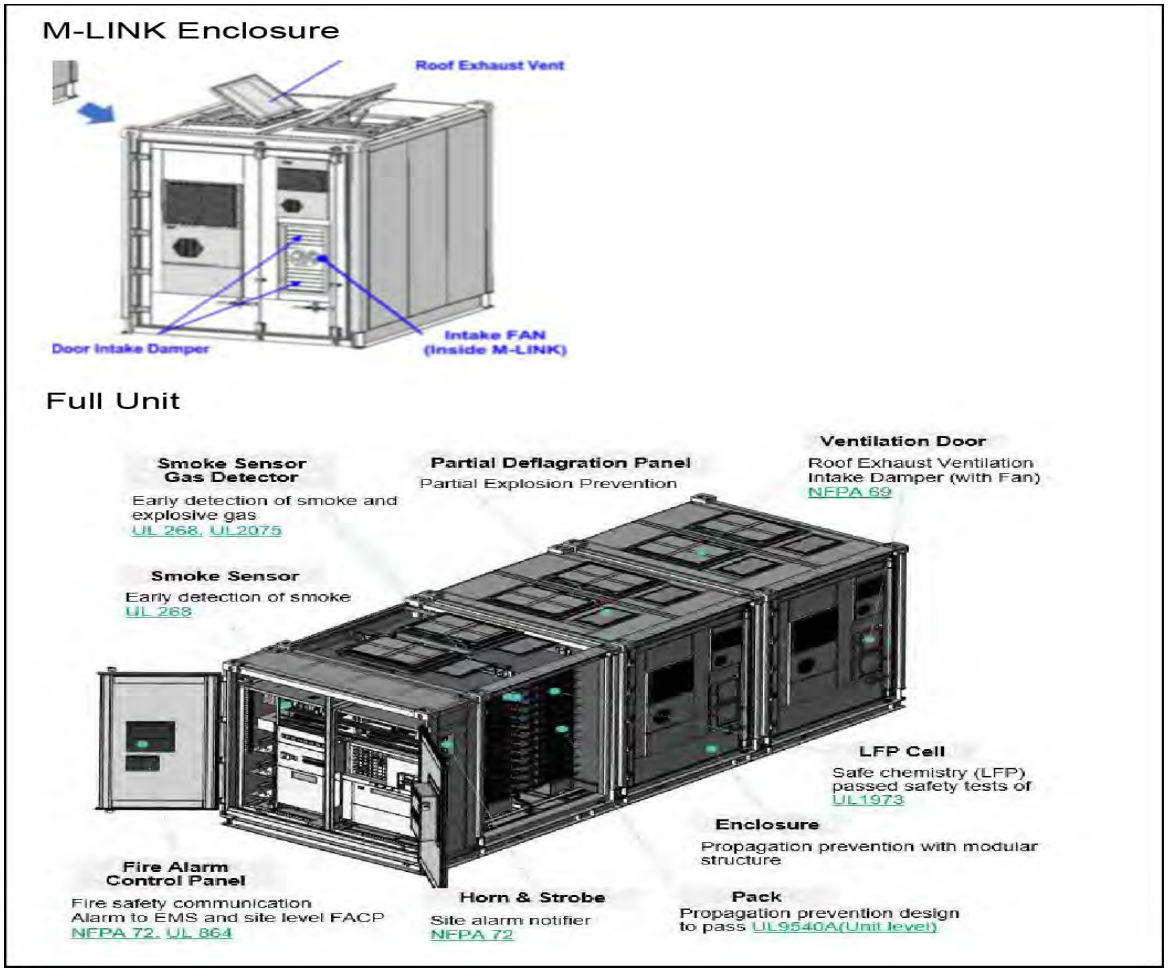
- Ventilation door: Roof exhaust ventilation intake damper (with fan) as per NFPA 69.
- Partial Deflagration Panel: Partial explosive prevention.
- LFP Cell: Passed safety tests as per UL 1973.
- Enclosure: Helps prevent enclosure-to-enclosure propagation.
- Pack: Thermal Insulation prevents Sub-Pack thermal propagation.

Cell

Module

Rack

Figure 4.4-1 LGES JF2 DC LINK 5.1



Source: TT 2026e

Potential BESS Safety Hazards

The CEC staff's evaluation of the safety of lithium-ion batteries determined that large lithium-ion BESS installations may pose potential hazards. Because they store large amounts of energy, one of the principal hazards associated with a lithium-ion BESS is fire, which could occur if a charged battery cell was somehow damaged, for example by being opened, punctured, or crushed. A fire could also be caused if a battery cell is overcharged, short-circuited, overheated, or experiences thermal runaway.

Thermal runaway is a process in which the lithium-ion cell enters an uncontrollable, self-heating state and can emit toxic gases such as hydrogen chloride, hydrogen fluoride, hydrogen cyanide, and benzene along with flammable/explosive gases including hydrogen, methane, propane, ethylene, carbon monoxide, and others. These flammable gases could potentially lead to an explosion within the BESS container. Due to the potential for fire and

explosion, CEC staff concludes that the project's BESS would present a significant risk that should be mitigated.

Like most metal batteries, hydrogen and other flammable gas evolution occurs in lithium-ion batteries due to a parasitic reaction at the anode but the amount varies (even aqueous flow batteries emit small amounts of hydrogen (~ 6 microliters per minute)). Some BESS enclosures feature a chimney effect convection cooling design that would automatically dissipate the small amount of hydrogen that could be off-gassed. In addition, stacked enclosures can be fitted with a forced-air ventilation system if the natural convection air flow is insufficient for venting purposes. However, given the extreme range of hydrogen flammability, generation of hydrogen remains a safety issue, for any lithium-ion batteries, including the one proposed by the applicant for this project.

The BESS industry has continued to prioritize safety improvements to batteries. For example, the industry made a shift in hazard mitigation at BESS installations after a BESS unit in Surprise, Arizona (a suburb northwest of Phoenix) experienced a thermal runaway event on April 19, 2019. That BESS was equipped with a suppression system but not deflagration venting or explosion prevention systems. The failure report issued by Arizona Public Services (McMicken 2020) indicated that the suspected fire was an:

> "extensive cascading thermal runaway event initiated by an internal failure within one battery cell of the BESS. The BESS's internal fire suppression discharged a clean agent preventing the fire from spreading to surrounding battery racks. However, the compromised batteries emitted a mixture of combustible gases, which accumulated in the BESS enclosure. The fire department responded and took no immediate action due to a lack of information concerning the system and the event. When a HAZMAT team attempted to enter the BESS area to survey the scale of the event, an explosion occurred, seriously injuring four firefighters."

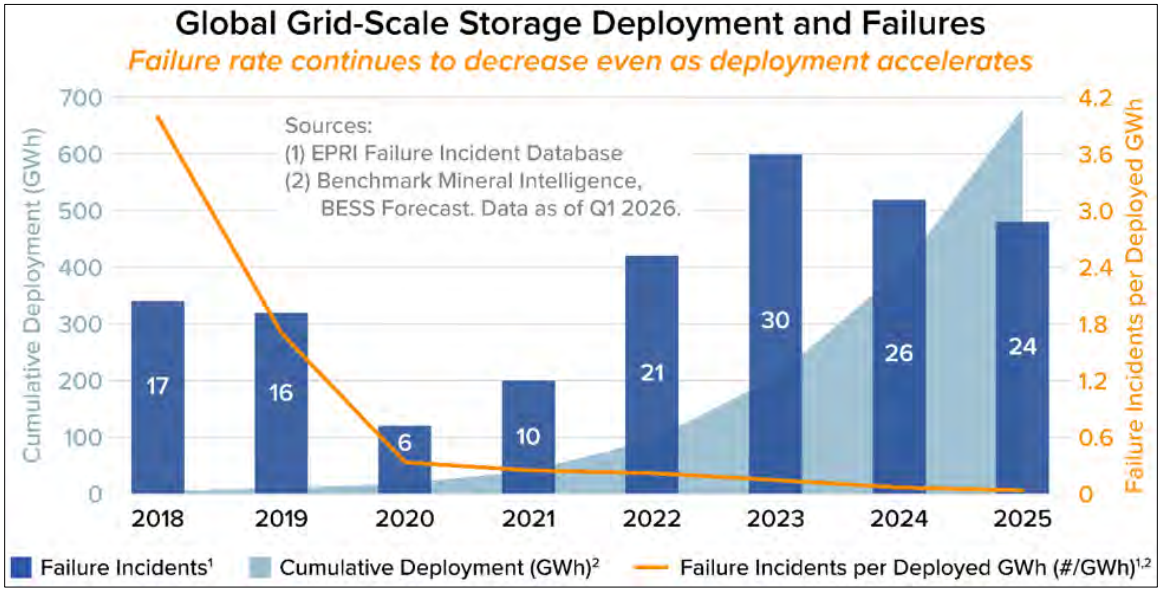
This event catalyzed further review and evaluation of the risks and hazards to workers, first responders, and the public posed by lithium-ion grid-sized batteries. This failure spurred additional guidelines, recommendations, and additions to fire codes and industry standards including one important industry practice: placing the modules inside a container with no entrance possible, which is the case for this project. While the Surprise, Arizona failure identified a battery cell internal failure, a comprehensive review of BESS incidents worldwide indicates that battery cell failures have not been the primary contributing cause to BESS failures.

Real-world use of these battery systems identifies the following failure modes (EPRI 2024a, EPRI 2024b):

- Design Failures: Flaws in the system's planned architecture, layout, or function that can arise from fundamental product flaws or a lack of safeguards.
- Manufacturing Defects: Flaws introduced during the production process, such as foreign materials in cells or incorrect physical tolerances.
- Integration, Assembly & Construction Issues: Errors during installation, component incompatibility, inadequate commissioning, or poor quality control, which can include faulty wiring, HVAC, and any internal fire suppression systems.
- Operational & Environmental Factors: Abusive operation (like overcharging, rapid charging/discharging), physical damage from impacts, or exposure to extreme environmental conditions.

The overall utility-scale BESS failure rate has sharply decreased while the global installed capacity has dramatically increased (see **Figure 4.4-2**). However, publicly-available data linking failure incidents by cause of failure are limited. The Electric Power Research Institute's (EPRI) 2024 White Paper attempted to address the gap in failure mode analysis by drawing from their own failure incident database consisting of 81 incidents between 2018 and 2024. Failures typically occur early in the project's lifecycle, but this could be due to the lack of older systems that exist at this point. Nevertheless, according to the research, at least 72 percent of failure incidents, where the system's age is known, occur during construction, commissioning, or within the initial two years of operation. The most recent data from EPRI shows that the failure rate dropped by 99 percent from 2018 to 2025 as lessons learned from early failures have been incorporated into the latest designs and best practices (EPRI 2026). Further discussion of the data CEC staff used in its frequency of events calculations can be found in **Appendix D, Dispersion and Frequency Analysis**.

Figure 4.4-2 Global Grid-Scale Storage Deployment and Failures from EPRI Database 2026



Source: EPRI 2026

EPRI's analysis challenges the widespread assumption that the lithium-ion battery cell is the primary cause of failure. All phases across the BESS lifecycle contribute to failure incidents. Integration, assembly, and construction contribute the most to failure incidents (EPRI 2024a, EPRI 2024b), with the majority of cases involving controls (46 percent) and balance of system (BOS) components (43 percent) (EPRI 2024a; Kaliaperumal 2021; Menye 2025). These BOS components encompass DC and AC wiring, heating, ventilation and air conditioning (HVAC) subsystems, and safety features like fire suppression systems. Investigations into these incidents uncovered that many failures occurred when the state of charge (SOC) was greater than 90 percent. Design flaws, such as not considering all operating conditions, have also caused problems.

Controls related to the battery management system (BMS), HVAC, and other systems plus BOS components account for most failed components (89 percent). Only 11 percent of failure incidents were directly caused by the battery cells themselves (EPRI 2024a). However, many incidents labeled as "controls" failures stemmed from operational challenges tied to managing battery cell SOC, voltage, and current issues rooted in cell limitations. These were categorized as controls failures instead of cell/module issues because they could have been avoided by enforcing stricter operational limits.

EPRI's recommendations include enhanced site-specific hazard assessments, improved battery monitoring and analytics, better workforce training, and stricter

quality controls during manufacturing and installation. EPRI's analysis shows that BESS safety requires thorough engineering and testing.

As indicated by EPRI, it can be hard to ascertain the exact cause of BESS fires because root cause analyses are not always shared with the regulator or fire department because they may be considered proprietary by battery manufacturers. CEC staff proposes COC **WORKER SAFETY-7** to ensure that any root cause analysis is provided to the CEC and local fire department for review and comment.

BESS Incidents in California

CEC staff has reviewed incident reports for the more recent BESS safety incidents since 2022 in California. The past three years was chosen because of several factors: a) this was an attempt to capture BESS projects deployed using the most recent technologies and codes while still having enough data to be valid; b) the technology is rapidly changing so using a 3-year period is an attempt to adjust for that; c) LFP batteries have become the primary chemistry used in BESS only in the last 3 years or so; d) new failure test methodologies (e.g., an update to UL 9540A) were introduced in 2022; and e) the initial implementation of better engineering controls started around then. If this was a more established industry, like oil and gas, CEC staff would use a much longer timeframe.

Several of these are discussed in detail below:

1. PG&E; Elkhorn Battery Energy Storage Facility; Moss Landing, CA; September 20, 2022
2. Terra-Gen; Valley Center Energy Storage Center; San Diego County, CA; September 18, 2023
3. REV Renewables; Gateway Energy Storage Facility; Otay Mesa, CA; May 15, 2024
4. Convergent; Orange County Energy Storage Facility; Santa Ana, CA; July 17, 2024
5. San Diego Gas & Electric (SDG&E); Northeast Operations Center; Escondido, CA; September 5, 2024
6. Vistra Energy; Moss Landing Battery Energy Storage Facility; Moss Landing, CA; January 16, 2025
7. Arevon; California Flats Solar Project; Monterey County, CA; August 30, 2025
8. Convergent Energy & Power; Church Street Battery Storage Facility; Warwick, NY; December 19, 2025 (*NOTE: This incident occurred outside the State of California but was included for informational purposes.*)

2022 Elkhorn BESS Incident

CEC staff inspected the site of the Tesla Megapack fire that occurred on September 20, 2022, at the Elkhorn Battery Energy Storage Facility near Moss Landing, CA, where one out of a total of 256 Megapacks caught fire. The North County Fire Protection District (NCFPD) responded to the incident and proceeded to let the fire burn itself out per Tesla's emergency action plan for first responders. The fire department used onsite fire water monitors (water cannons) to cool adjacent modules to prevent them from overheating. The NCFPD also had access to a Command-and-Control (CNC) center outside of the BESS facility. The CNC gave firefighters access to the BESS telemetry that was relayed to Tesla along with feeds to the thermal infrared cameras that were placed around the site. This information allowed the incident commander to see what BESS enclosure was on fire based on the BESS telemetry and confirmed with the infrared cameras. It also allowed the incident commander to create an action plan to safely battle the fire and to monitor the situation in real time. CEC staff learned that during project commissioning, the project owner had provided training opportunities to the NCFPD for practicing how to address a fire at the facility.

2023 Valley Center Terra-Gen BESS Fire

The outdoor LG container battery storage unit in Valley Center in northern San Diego County (140 MW/560 MWh) had its first BESS unit fire on April 5, 2022. It appears that some of these units contained a sensor system that experienced a fault which triggered the water-based protection systems and caused the fire. Another fire occurred there on the evening of September 18, 2023 (Energy Storage News 2023). The Fire and Sheriff's departments were dispatched, roads were closed, and out of an abundance of caution, an evacuation order for the surrounding 0.25 miles was issued. Additionally, a shelter in place was issued for the 0.5 miles surrounding the site. Fire officials said the fire was put out in about 45 minutes and extinguished by the site's internal fire prevention system (San Diego Union-Tribune 2024). The evacuation and shelter in place orders were lifted after 4 hours. The facility's design kept the incident contained and San Diego County Hazardous Materials team monitored the air and water around the site during the incident and found no hazardous conditions. Although an official root cause report is not available, fire department officials thought the fire was likely caused by thermal runaway within a single lithium-ion battery cell.

2024 Gateway Otay Mesa BESS Incident

On May 15, 2024, there was an incident at the 240-MW Gateway Energy Storage Facility (GESF) in Otay Mesa, California which is composed of five buildings that house the BESS. There was a thermal runaway event in one battery rack in building three (in the middle of the five-building unit row) which caused a fire at the GESF. GESF is a battery-in-a-building project, which CEC staff has found to

be rare with only four located in the state, with fire barriers, a chemical suppression system, and a pre-action fire protection system. The chemical fire suppression activated but did not put out the fire. The pre-action system then activated allowing the flow of water to help contain the fire. The fire department appears to have made the decision to keep the pre-action sprinkler water flowing to keep the temperature down and to help protect the integrity of the roof to avoid collapsing. Additionally, the firefighters had to cut into the building to allow more water to be sprayed into it to help control the fire. The fire burned itself out by May 22, 2024. CEC staff visited the site on May 29, 2024, and found that structural integrity of the building was being assessed due to the incident. CEC staff's conclusion is that the BESS "failed safely." Equipment worked as planned, the fire department knew what it had to do, and there were no injuries to onsite staff, the firefighters, or the public. However, this incident illustrates the challenges of placing utilityscale BESS into dedicated buildings when an incident occurs.

2024 Orange County BESS Incident

On July 17, 2024, there was an incident at the Convergent Energy Storage Facility in Santa Ana, California which is composed of outdoor, containerized lithium-ion BESS. The fire resulted in extensive damage to one container and exposure damage to additional nearby containers. The industrial area was temporarily evacuated for approximately one hour due to concerns about toxic smoke emissions (Orange County Register 2024). At the time of the incident, the cause of the fire was undetermined according to Orange County Fire Authority (OCFA) incident reporting.

2024 Escondido BESS Fire

On September 5, 2024, a fire erupted at SDG&E's 30 MW/120 MWh BESS facility in Escondido, California. The fire was confined to a single containerized unit out of the 24 on-site and lasted approximately 13 hours before burning out. The blaze broke out in one of the battery storage containers and quickly escalated. According to reports, the fire was first detected by the facility's monitoring systems, triggering an immediate response from SDG&E personnel and local emergency services. The internal unit's fire suppression system activated but was unable to extinguish the fire due to the heat generated by the thermal runaway event. Firefighters arrived on the scene and implemented specialized containment strategies to prevent the fire from spreading to adjacent containers. The event was limited to one of 24 battery storage containers. There were no reported injuries (Energy Storage News 2024). Along with the San Diego County Hazardous Materials Division, the San Diego County Health Department and the City of Escondido, SDG&E actively monitored air quality at the site of the fire and in the evacuation area throughout the incident, using, in staff's opinion, appropriate sampling and analysis equipment with detection limits that were suitable for the protection of worker and public health. Sampling locations and

screening levels were identified under the guidance of the County and City Incident Coordinator, who have reviewed all results along with SDG&E and determined that the air quality did not pose a health risk for those on site or in the evacuation area (SDG&E 2024). Investigations into the root cause of the fire have not yet been released to the public, but preliminary reports suggest a possible electrical fault or manufacturing defect within one of the battery cells.

2025 Moss Landing BESS Incident

A fire occurred on January 16, 2025, at the 300 MW Moss Landing Battery Energy Storage Facility (MLBESF) owned by Vistra Energy. This facility houses one of the world's largest indoor BESS. Unlike the GESF though, the building was not purpose-built but rather the BESS units were placed inside a repurposed turbine hall formerly used by the Moss Landing Power Plant. The fire spread from one rack to others and eventually engulfed most of the building. The blaze prompted the evacuation of approximately 1,200 to 1,700 residents from nearby communities and released plumes of black smoke. The cause of the incident is currently under investigation. The CPUC and Vistra, the owner, are still conducting separate root-cause analyses. This incident demonstrates the safety issues of placing grid scale BESS inside buildings.

2025 Arevon California Flats Solar Project

On August 30, 2025, a fire broke out at the California Flats Solar Project, located southeast of Parkfield, California in the far southeast corner of Monterey County, a sparsely populated area very close to the borders with Fresno, Kings, and San Luis Obispo Counties. The facility consists of 130 MW of solar photovoltaic generation with a 240 MWh BESS composed of 85 Tesla Megapack units. CAL FIRE Station #41 in nearby Parkfield was the first to respond. Although CEC staff have not yet received the full incident report, this much is known: The incident began in the late morning involving two Megapack battery containers and was originally reported as a vegetation or brush fire. Out of an abundance of caution, the Monterey County Sheriff's Office quickly issued an evacuation order for a two-mile radius, affecting five rural residences in the surrounding area. The order was lifted 3 hours later. Tesla's Field Response Team was dispatched to the site to evaluate the situation. After conducting a safety assessment, they determined that the fire had stabilized and posed no further danger to the public. Fire crews continued to monitor the scene through the night, using a containment approach that allowed the burning battery units to extinguish themselves under controlled conditions. No injuries or off-site damages were reported (KSBY 2025).

2025 Church Street Battery Storage Facility Warwick, NY

On December 19, 2025, a fire occurred at the energy storage developer Convergent Energy & Power's Church Street Battery Storage Facility at 28 Church

Street in Warwick, New York. The facility is at the rear of a commercial business park. The fire was confined to one container unit. The Orange County, New York Hazardous Materials Response Team began providing continuous air monitoring at 12:27 AM on December 20, 2025 (Labella 2026). Air monitoring persisted until 2:00 PM on December 22, 2025. Air monitoring was conducted in one-minute increments at three locations surrounding the fire, including Warwick Little League Park, approximately 600 feet south of the site, and the southeast and northeast corners of the burn site. The monitoring included CO, HCN, NH_3, VOCs, and Cl_2. The maximum reported concentrations were 4 ppm CO, 1.5 ppm HCN, 1.0 ppm NH_3, 0.3 ppm VOCs and 0.5 ppm Cl_2. The highest CO, HCN, VOCs, and Cl_2 readings, which were reported at Warwick Little League Park, primarily occurred between midnight and 8:00 AM on December 20, 2025. The maximum NH_3 reading was reported at Warwick Little League Park and later at the northeast corner of the burn site on December 20, 2025. The reported maximum concentrations did not exceed the available applicable U.S. EPA and New York State Department of Environmental Conservation (NYSDEC) ambient air quality standards. Occupational Safety and Health Administration (OSHA) short-term exposure limits were used for informational comparison if a U.S. EPA or NYSDEC regulatory limit was not available (Labella 2026). The reported concentrations were all below these informational comparison limits.

Lessons Learned from BESS Incidents

CEC staff's review of BESS incident history demonstrates that siting a BESS facility outdoors in containers and not inside a building minimizes the damage caused by thermal runaway fires and reduces the threat of fire propagation. BESS outdoor container fires are typically limited to a single container and can last anywhere from under an hour to 13 hours or more. Proper training for first responders with the appropriate fire water supply infrastructure and monitoring infrastructure can be critical for safely limiting fire damage and controlling the fire. CEC staff's approach was echoed by the American Clean Power Association (ACP 2023) in response to concerns generated by the Moss Landing fire. ACP endorsed a three-part strategy that includes the following policy recommendations and safety requirements:

- Ensuring safety at all future energy storage facilities by requiring all battery storage facilities to comply with the latest published version of NFPA 855. State and local governments should "proactively adopt and enforce this safety standard."
- Advancing safety at existing battery storage sites by reviewing facilities built prior to the first adoption of NFPA 855 in the Fall of 2019 and considering a hazard mitigation analysis (HMA). State and local governments can require an HMA and corrective action, including the use of fire barriers or engineered solutions to meet large-scale fire testing requirements. All facilities should

maintain an emergency response plan submitted with the local fire and emergency response authority.

- Strengthening coordination with fire departments & local communities by increasing communication and training. The industry and state and local governments should regularly coordinate on safety planning, siting and permitting requirements; continuously improve safety practices; and regularly provide training to facility operators and the fire service.

Transportation Safety Issues

In addition to the fire and explosion risks discussed above, there is also the possibility of fire during the transport of the lithium-ion BESS containers. The JF2 DC LINK containers would be purchased domestically from LGES and shipped to the site. Transportation accidents on highways involving lithium-ion batteries falling off flatbed trucks resulting in fires and highway closures have occurred, including two incidents in California in 2024. On Friday July 26, 2024, an overturned semi-truck transporting lithium batteries caught fire, shutting down I-15 near the unincorporated town of Baker in San Bernardino County for 40 hours. The incident was cleared at approximately 3:00 AM on Sunday, July 28, and traffic was reopened on I-15 (Caltrans 2024). Another incident and fire occurred on September 26, 2024, in San Pedro, CA when a semi-truck carrying six large lithium-ion batteries overturned, sparking a fire and hazardous materials concerns while also forcing a closure of the 47 Freeway and the Vincent Thomas Bridge, causing major traffic backups in the area (ABC News 2024). Los Angeles County Fire crews stated that attempting to put the fire out with water was not advisable due to the large amounts of water needed and the possible contamination from water run-off. There were no immediate reports of injuries, evacuations or widespread hazardous warnings.

CEC staff has reviewed this matter and found that the Pipeline and Hazardous Materials Safety Administration (PHMSA) issued a final rule that became effective on January 20, 2023, that required all lithium-ion batteries transported by air to have a state of charge (SOC) of 30 percent or less. This regulation was issued to enhance the safety of transporting lithium-ion batteries in aircraft. A lower SOC has been shown to halt or minimize the propagation of thermal runaway within a package and decrease heat release values. It appears that the SOC affects the flammability limits in an apparent parabolic matter, where the widest flammability limits are at or near 100 percent SOC (PHMSA 2018). Therefore, reducing the SOC during transportation reduces the severity of the thermal runaway, slows or eliminates propagation of the thermal runaway, and reduces the volume of flammable gases vented during thermal runaway. There is not a similar rule for ground transportation. Though some lithium-ion batteries could be shipped via ground transport with a SOC of 30 percent, there is no guarantee that this would occur. Therefore, CEC staff proposes COC **WORKER SAFETY-7**,

requiring the project owner to ensure that any lithium-ion batteries shipped to the project site would not have an SOC above 30 percent.

Methodology

Construction and Operations

CEC staff uses a variety of recent industrial standards (UL Solutions and NFPA), CPUC GO 167-C, and the latest edition of the CFC to guide its evaluation of BESS projects that seek a license to construct and operate. These codes and industrial standards include:

- California Fire Code, Chapter 12, contains fire safety requirements for stationary lithium-ion battery energy storage systems;
- CPUC General Order (GO) 167-C Enforcement of Maintenance and Operation Standards for Electric Generating Facilities and Energy Storage Systems;
- NFPA 855: Standard for the Installation of Stationary Energy Storage Systems (Edition – 2026);
- UL 9540 (2023): Standard for Safety for Energy Storage Systems and Equipment; and
- ANSI/CAN/UL 9540A (2025), the Standard Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems.

California Fire Code (CFC)

The CFC was amended in August 2024, to include section 1207 et seq. pertaining to BESS facilities. Some of the many safety provisions include requiring the following:

- Large-scale fire testing
- A commissioning plan
- Ongoing Inspection and Testing
- Toxic gas exhaust systems
- A hazard mitigation analysis
- A decommissioning plan

The Corby BESS would comply with the current CFC, which governs the code requirements to minimize the risk of fire and life safety hazards specific to BESS used for load shedding, load sharing and other grid services (CFC, Ch., 12 § 1206).

CPUC GO 167-C

In the most recent March 13, 2025, iteration of General Order 167 (GO 167-C), the CPUC affirmed its jurisdiction over the "maintenance and operation of electric generating facilities and power plants so as to maintain and protect the public health and safety of California residents and businesses, to ensure that electric generating facilities are effectively and appropriately maintained and efficiently operated, and to ensure electrical service reliability and adequacy" (CPUC 2025). GO 167-C adds new safety standards for the maintenance and operation of BESS installations including:

- BESS owners must develop emergency response and emergency action plans, as required by SB 38.
- Technical updates to the standards to improve safety reliability, and effectiveness of operation and maintenance activities, such as establishing technical logbook standards for battery storage systems and expanding requirements for emergency plans that relate to all electric generating facilities.

CEC staff determined that GO 167-C would enhance the safety and reliability of the proposed BESS facility and the project owner is required to develop emergency response and emergency action plans and meet new technical standards specified in revisions to CPUC GO 167-C.

NFPA 855

NFPA 855 is the Standard for the Installation of Stationary Energy Storage Systems. The project owner has stated that the BESS would be built to comply with NFPA 855. CEC staff concurs that NFPA 855 would improve the safety of the BESS. NFPA 855 (Second Edition - 2023) was incorporated into the CFC effective January 1, 2026, requiring project compliance. However, NFPA 855 (Third Edition – 2026) was released on September 11, 2025, and would not be referenced as a standard in Chapter 80 of the California Building Standards Code and would not be enforceable. CEC staff has determined that due to the rapidly changing nature of the BESS industry it would be advisable to use the latest NFPA 855 standard since it now incorporates the latest safety practices. Therefore, CEC staff proposes COC **WORKER SAFETY-6**, requiring the project owner to follow the latest version of NFPA 855, for the construction, commissioning, and operation of the BESS.

UL 9540

UL 9540 lists requirements for BESS supporting the local-area electric power systems or the electrical utility power grid. UL 9540 is the primary safety standard that certifies a BESS as an integrated whole, ensuring that all components (i.e., battery modules, power conversion system, battery

management system, and thermal controls) operate safely together. Rather than testing parts in isolation, UL 9540 evaluates how these subsystems interact, covering electrical, mechanical, control, and fire safety performance. It verifies proper coordination between the BMS and inverter, system-level fault protection, safe shutdown behavior, and containment of thermal events (with UL 9540A used to assess fire propagation). In short, UL 9540 ensures that the entire assembled BESS functions safely and reliably as an integrated system. Any BESS project would be required to comply with UL 9540 as it is required by the CFC. The LGES JF2 DC LINK is UL 9540 certified.

UL 9540A

UL 9540A is the American and Canadian national standard for addressing thermal runaway propagation for energy storage systems, which provides the standard test methodology for determining fire and explosion hazards presented by a given BESS design when undergoing an overheating failure, such as thermal runaway. As mentioned above, CEC staff relies on the UL 9540A standard testing protocol and report to assess the possibility of a thermal runaway reaction for BESS projects. This test method was developed by UL Solutions (formerly Underwriters Labs), a company that researches safety and development of standards addressing the risk from fires and electric shocks (UL Solutions 2025). OSHA and Cal OSHA both require that almost all electrical devices and cables in workplaces meet the relevant UL standards. Test results on the proposed batteries have demonstrated that under thermal runaway conditions, emissions can include flammable or explosive gases including hydrogen, methane, propane, ethylene, and the toxic substances benzene, toluene, xylene, and an asphyxiant carbon monoxide.

The LGES JF2 DC LINK underwent comprehensive UL 9540A testing which was conducted by UL Solutions on behalf of LGES. Evaluations were completed at the cell, module, and unit (container) levels in accordance with UL 9540A.

Cell-level testing was conducted in a laboratory where the cell was forced by an external heating method to go into thermal runaway. Testing required external heating well beyond normal operating limits to induce failure, confirming the inherent thermal stability of the LFP chemistry. When thermal runaway was initiated, the cell was found to emit flammable gases which were captured and analyzed. No sustained flaming or explosive behavior occurred after heat removal; however, the result demonstrated a failure at the cell level.

The LGES JF2 DC LINK module consisting of 104 cells then underwent module-level testing where thermal runaway propagated to adjacent cells in the module, and again flammable gases were emitted. The event was confined to the module; however, it did not meet UL 9540A's non-propagation acceptance criterion at the module level.

A unit-level test was then conducted on an LG container system representative of the equipment proposed for the project. The container consisted of three vertical racks, each containing 14 modules (total of 42 modules). A thermal runaway event was intentionally triggered in one module within a single rack to simulate a worst-case internal failure. The test results showed that combustion and heat release were limited to the initiating rack, with no propagation to adjacent racks or neighboring containers. The enclosure's venting system successfully relieved pressure and expelled gases, maintaining concentrations below the lower explosive limit (LEL) and preventing deflagration. The LG container met UL 9540A propagation-prevention criteria at the unit level, confirming that the enclosure design effectively limits escalation of a thermal runaway event.

A separate large-scale burn test was conducted by UL Solutions to further evaluate the real-world fire performance of the LGES battery system. The test utilized one LGES BESS containing three M-LINK battery enclosures. A target unit comprised of one container was placed at the rear of the test container. A single container with a few modules was placed 3 feet to the right, thus serving as a side target unit, and two target walls were placed to the left and front of the complete BESS. During the test, thermal runaway was initiated by heating three cells and igniting a module. One container was intentionally subjected to a controlled failure and full-burn sequence to assess structural integrity, fire-propagation potential, and emissions behavior under uncontrolled conditions.

Thermal runaway was induced which started a large fire within the initiating enclosure. The fire propagated through all racks inside that container, resulting in a complete burn-up of the initiating unit. However, no thermal propagation or ignition occurred to any of the adjacent containers. Temperature monitoring showed that although elevated exterior temperatures were recorded on neighboring units, internal temperatures remained well below critical thresholds due to the containers' insulated steel construction. Cell temperatures in adjacent enclosures did not exceed 75 percent of the thermal-runaway onset temperature, and no components of the neighboring units other than paint and door seals were compromised or ignited. However, it should be noted that, although the tests attempt to mimic real-life conditions, only minimal wind effects occur during these tests, thus reducing the probability of fire propagation to a neighboring BESS container.

Project BESS Fire Prevention Design

The project owner is required to implement a fire detection system and design specific to the battery supplier, water supply, and site plan. Each of the three BESS units within the container has an active gas ventilation system and fan that is activated by a gas detector located inside the units near the top of the wall (see **Figure 4.4-1**). According to the applicant, the JF2 platform represents

LGES's latest generation of energy storage technology with several safety enhancements which include:

- Advanced liquid cooling provides enhanced thermal management.
- Skidded Design: Includes pre-wiring and pre-testing.
- Explosion Protection: Builds upon previous fire safety engineering and includes roof exhaust vents, intake fans and dampers, and deflagration panels for mitigating partial volume deflagrations.

In discussions with LG and the project applicant, CEC staff learned the battery and model chosen has been in use for slightly more than 2 years. LG stated that as of January 2026, no thermal runaways leading to a fire, explosion, or evolution of gases has occurred. In further discussions with other vendors, staff has learned that in general, off-gassing of toxic fumes begins around 50° C (120° F) and thermal runaway begins around 120° C (248° F). The time it takes a cell to go from stable to unstable after damage to the cell (such as an electrical short, puncture, or overcharge), and then to off-gassing is long enough (15 minutes up to several hours) for the BMS to give a warning to a remote operator or the manufacturer to allow shut-down and the isolation of the module containing the malfunctioning cell, thus potentially averting either a thermal runaway or propagation of that cell to a neighboring cell, module, or unit. This time-delay also allows the remote monitoring of temperature sensors in the BMS to activate emergency responses from the offsite control center before off-gassing occurs and to notify the DFD should thermal runaway occur.

CEC staff is concerned about a unit losing power, such as during a fire, which could shut down critically important fire and explosion protection controls. Although the applicant provided a narrative description of each localized Fire Alarm Control Panel (FACP) having a battery backup of 24 hours (standby power) and 2 hours (alarm power), no mention is made in the narrative about other systems' backup power. These systems are smoke detection and alarm notification devices, including external horn and strobe devices for fire and gas detection, and the intake damper and ventilation fan system, although the fan is provided with battery backup power located within the E-PANEL, as shown in the electrical drawings (TT 2026b, PDF p. 278 electrical drawing) but not discussed in the narrative. To ensure these critical warning and control devices are provided with backup power, a requirement for backup power is included in proposed COC **WORKER SAFETY-7**.

The project has not proposed the use of external thermal detectors at various locations of the entire facility, instead relying upon the internal BESS unit temperature sensors for warning. As an additional layer of safety, CEC staff is proposing that COC **WORKER SAFETY-7** contain this requirement.

The applicant claims that the two pressure release vents (partial deflagration panels) located on the roof of each module are voluntarily installed as an additional layer of protection to mitigate partial volume deflagrations under delayed or failed active exhaust venting conditions. CEC staff conducted a review of their assessment and disagrees that this passive device may operate as intended, thus a deflagration might not be significantly reduced. To address this risk to the occasional on-site workers and first responders if a fire should occur, staff is proposing that the ERP and table-top exercises include this information for first responders. However, since CEC staff agrees that this device is not required to have deflagration panels because of the exhaust fans installed, CEC staff is not requiring further review or modifications to these panels (see COC **WORKER SAFETY-7**).

Also, as the 2022 Elkhorn PG&E incident demonstrated, it is essential to have training provided by the project owner to the first responders to establish roles and responsibilities ahead of time. It is also advantageous to have a Command and Control (CNC) outside of the BESS facility so that an incident commander can safely assess the situation and determine a course of action to combat a fire incident. To ensure that these mitigations are adopted, CEC staff proposes COC **WORKER SAFETY-7** that would require administrative and engineering controls to prevent or respond to a fire from the BESS.

BESS facilities include BMS that continually monitor battery performance. At the lowest level the BMS monitors individual cell voltage and temperature. At the Rack Level it calculates the State of Charge and at the system it oversees the entire battery bank. The BMS coordinates with the Energy Management System that dictates overall charging / discharging of the BESS. The BMS also coordinates with the Power Conversion System (PCS) - that converts DC to AC power. The BMS will restrict the PCS from pulling power if battery thresholds or temperatures are exceeded. In this manner, all cells, racks, modules, and units are continuously monitored remotely which removes the need for onsite personnel.

Water Supply. The BESS enclosures are outdoors and are not “walk-in” cabinets; therefore, fire suppression is not required by the CFC. Water would be used for life-safety purposes such as rescuing on-site personnel in the event of a BESS fire. And, at the discretion of the first responders and incident commander, water could be used for cooling adjacent units in the event of a fire. However, firefighters are advised to use water for cooling and not for extinguishing an LFP BESS fire. Adding water to an LFP BESS fire could combine water with toxic gases, most notably hydrogen fluoride, creating hydrofluoric acid (Jensen Hughes 2025). Also, extinguishing the BESS fire in BESS units that are still energized would increase the potential for a buildup of flammable gases (not being burned) creating an explosion potential.

Staff also addressed the need to ensure that water used for emergency purposes on the site would not leave the site. Referring to **Section 5.16, Water Resources**, of this Staff Assessment, the project owner would be required to prepare a Water Quality Control Plan (WQCP) prior to project construction that would address contaminated water in the event of a fire or other emergency during construction and operations. The WQCP would provide measures to retain contaminated water and protect the shallow groundwater aquifer. Furthermore, the applicant's proposed stormwater retention ponds would have capacity to hold a 10-year 24-hour storm volume that would exceed the volume of water from an emergency event.

The industry standard is to allow the BESS fires to burn out while stopping the spread to adjacent units, with passive/active design features or water cooling of adjacent units (U.S. EPA 2025). Furthermore, the LG *Energy Solution Energy Storage System (ESS) Product Safety Guide* recommends allowing an affected unit to consume itself and not to apply water to a burning unit (LGES).

This procedure has been emphasized by the applicant and would again be reinforced in documentation and training. The applicant has stated that the "defensive approach would be outlined in a site-specific emergency response plan [ERP] and orientation presentation to be given by NextEra Energy to the local fire department(s)." The ERP would be required by proposed COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**, both of which would be reviewed and approved by the CEC CPM.

The site is not connected to a municipal water main; thus, water tanks for firefighting and life safety would be used. The applicant has proposed that a 24,000-gallon water tank would be available onsite. The water tank would not be used for fire suppression of a BESS fire, but for cooling adjacent units if chosen by the DFD and for life safety actions. The water would also be used for fire suppression at any other structure on the site such as the ancillary structures.

CEC staff is concerned that 24,000 gallons of water for life safety or inhibition of propagation of a BESS fire is not adequate. The DFD agrees and noted that it concurs with CEC staff that a fire flow of 1,200 gallons per minute would be needed for life safety rescue and possibly for cooling adjoining BESS units.

Since the DFD has only one 2,000 gallon water tender available which may be supplemented by another 5,000 gallon tender owned by the DFPD if it is available, CEC staff has proposed an additional requirement in proposed COC **WORKER SAFETY-7** that the project owner shall consult with the DFD in preparing and implementing the final fire protection system specifications and drawings to ensure that an adequate water supply (compliance with NFPA 1142 rural supply standards) and hydrant connection at the water storage tank are

available for life safety fire suppression for the BESS facility as well as for ancillary structures.

Additionally, because the BESS facility would be operated remotely, the applicant, CEC staff, and the DFD discussed the need to have a project technical representative present whenever the fire department responds to an emergency at the site, particularly for a thermal runaway notification or fire. The applicant stated an estimated time of arrival of this person as a few minutes (if that person was close by) or up to one hour if the drive time was during congested hours. Because it is very important for a project staffer to be at the site as soon as possible with a laptop to provide telemetric data on any unit in question, staff proposes an item within COC **WORKER SAFETY-7** that would require that person to arrive at the site in an emergency not later than 15 minutes from the time the remote control room is notified by sensors of a heat anomaly or fire in any cell, module, or unit.

Site Design. The project owner has designed the BESS facility to meet the definition of a "Remote Outdoor Installation," which is a minimum of 100 feet from lot lines, compared to the required CFC minimum of 10 feet.

CEC staff concurs that these measures would help to mitigate the fire risk posed by the BESS. However, CEC staff has determined based on the above discussion that there are additional measures that would help to mitigate the fire risk posed by the BESS. As the 2022 Elkhorn PG&E incident demonstrated, it is essential to have training provided by the project owner to the first responders to establish roles and responsibilities ahead of time. It is also advantageous to have a Command and Control zone outside the BESS facility so that an incident commander can safely assess the situation and determine a course of action to combat a fire. U.S. EPA guidance suggests setting an isolation zone at least 330 feet from large commercial BESS (U.S. EPA 2025). To ensure that these mitigations are adopted, CEC staff proposes COC **WORKER SAFETY-7** that would require administrative and engineering controls to prevent or respond to a fire from the BESS.

As mentioned above, CEC staff relies on the UL 9540A standard testing protocol and report to assess the impacts of a thermal runaway reaction for BESS projects. This test method was developed by UL Solutions (formerly Underwriters Labs), a company that researches safety and development of standards addressing the risk from fires and electric shocks (UL Solutions 2025). OSHA and Cal OSHA both require that almost all electrical devices and cables in workplaces meet the relevant UL standards. Test results from UL9540A testing and other research and industry studies on these types of batteries have demonstrated that under thermal runaway conditions, emissions of toxic gases such as hydrogen chloride, hydrogen fluoride, and benzene along with flammable/explosive gases including hydrogen, methane, propane, ethylene, and others can occur. Real-

world use of these battery systems also shows that fires have occurred and thus have the potential to occur (EPRI 2024). The four failure modes were previously discussed above and include design failures, manufacturing defects, assembly and construction issues, and operational & environmental factors.

Additionally, it can be hard to ascertain the exact cause of these fires and where they fall into the four categories of failures. Also, root-cause analyses are not always shared with the regulator or fire department as they can be considered proprietary by battery manufacturers. Sharing this valuable information would help to educate stakeholders about what happened and what could be done to improve BESS safety. To ensure that this information is disclosed if a BESS incident were to occur, staff proposes COC **WORKER SAFETY-7** which would ensure that any root cause analysis is provided to the CEC for review and comment.

Risk

In order to better understand the risk posed by a BESS fire to the occasional on-site workers, first responders, and the off-site public, CEC staff conducted a quantitative risk assessment. The full risk assessment with tables and the results of air dispersion modeling results is found in **Appendix D, Dispersion and Frequency Analysis**, of this Staff Assessment. The following is a discussion of what a risk assessment is, how it was conducted, the methodology used, the emissions from a BESS fire, how often a BESS fire might happen (frequency), and the airborne concentrations of TACs predicted in an upper-bound theoretical calculation, and how these maximum predicted levels compare to the level staff deems a less than significant risk (the impacts).

Risk, acceptable risk, insignificant risk, less than significant risk, voluntary risk, and involuntary risk are terms that describe the various “risk” scenarios, or chance something bad would happen. We live with risk in our advanced engineered society today. There is no “risk-free” environment. We all live with and make decisions about risk every hour of every day. What we eat, whether we drive, walk, cycle, run, fly, ride the train or bus, swim in a beach, pool, lake, or river, or workout, hike, ski, raft, or even just stay home and live a sedentary life, we all knowingly or unknowingly make decisions about what risks we take. We even experience involuntary risks imposed upon us by others or natural events. Examples of such risks include:

- Accidents while driving a car in the US: on average, the odds of a driver being involved in a car crash during their lifetime are 1 in 366, according to the Insurance Information Institute (NIII 2025).
- Risk of wildfire damage to residential structures: approximately 90 percent of all properties (135,242 homes) in Solano County have some level of risk of being affected by a wildfire over the next 30 years (WildfireRisk.org 2026).

- Home fire starting inside your home, requiring reporting to the Fire Department: on average, the odds are about 1 in 4 in your lifetime, or once every 350 years for a residence (NFPA 2013).
- An electric vehicle fire: 25 per 100,000 vehicles annually (Vinfastauto 2026).
- The chances of a neighbor's house fire impacting your home are relatively low on a day-to-day basis, but the risk increases significantly if homes are closer than 100 feet or during specific high-risk conditions like wildfires. While only about 10 percent of fires in vacant buildings spread to adjacent properties, the threat is higher in dense, suburban, or wildland-urban interface (WUI) areas where homes act as fuel for one another.
- In California from 2010 to 2022, a total of approximately 40 natural gas pipeline leaks (both transmission and distribution lines) occurred every year (Pipeline Safety Trust 2022). Twenty-three of these incidents ended in injury or fatality with 89 total injuries and 20 total deaths, 103 incidents resulted in fire and/or explosion, approximately 6,410 total members of the public were evacuated, and the release of 1,751,795 thousand cubic feet (mscf) of natural gas occurred.
- An earthquake in the Vacaville area within the next 30 years the probability is (USGS 2026b):

  100% that an earthquake measuring magnitude 6.75

  100% that an earthquake measuring magnitude 7.05

  100% that an earthquake measuring magnitude 7.55
- An earthquake in the Los Angeles area within the next 30 years the probability is (USGS 2026a):

  60 percent that an earthquake measuring magnitude 6.7

  46 percent that an earthquake measuring magnitude 7

  31 percent that an earthquake measuring magnitude 7.5

As mentioned earlier, CEC staff uses a variety of the latest industrial guidelines (UL Solutions and NFPA), the latest editions of California Fire Code (CFC) and CPUC General Orders, and what other fire authorities in California plan to guide its evaluation of BESS projects that seek a license to construct and operate. All the recent updates and revisions enhance the safety and reliability of BESS facilities by applying industry best practices, lessons learned, and new standards. CEC staff believes that these new standards would enhance the safety and reliability of the proposed Corby BESS facility.

A threshold of significance is the line at which a project's environmental impact becomes severe enough that mitigation is required to reduce that impact below the significance line. Impact categories based on the CEQA Environmental

Checklist, Appendix G, of the CEQA Guidelines are considered to evaluate if the relevant project impacts are to a degree requiring mitigation. A threshold of significance may be an identifiable quantitative, qualitative, or performance level. Determination of a threshold usually follows the format prescribed by Cal EPA, U.S. EPA, and professional organizations such as the NFPA. Two examples from NFPA include NFPA 550 for fire risk assessment, which provides guidance on the use of a Fire Safety Concepts Tree, and NFPA 551A, a technical guide to strengthening fire risk assessments and emergency response planning.

All methodologies include the use of some form of quantitative or qualitative probability (chances) assessment and a consequence (impacts) assessment. The quantitative risk assessment of the probability of a fire occurring can be *deterministic* or *probabilistic* (sometimes referred to as a *stochastic* assessment). A *deterministic assessment* uses fixed point input values for calculations.

CEC staff has determined that enough data is available to conduct a quantitative approach to determine the chances of an event occurring (in this case, an LFP BESS thermal runaway leading to a fire or off-gassing). This quantitative assessment is contained in **Appendix D, Dispersion and Frequency Analysis**, which is also referenced extensively in **Section 5.10, Public Health**.

When it comes to assessing the health impacts of a BESS fire on first responders and workers at the site — that is, the risk of harm or other adverse health impacts as a result of an exposure to a toxic substance (in this case exposure to a toxic gas emitted from a BESS fire) — CEC staff relies on the health-protective thresholds developed by Cal OSHA and the Cal EPA Office of Environmental Health Hazard Assessment (OEHHA) of each toxic compound emitted, the U.S. EPA AEGLs (Acute Exposure Guideline Levels) which apply to 10-minute, 30-minute, and 60-minute exposures, and the Immediately Dangerous to Life and Health (IDLH) levels. (See **Section 5.10, Public Health**, for an in-depth discussion on the potential impacts of the off-site public.)

The Cal OSHA Permissible Exposure Levels (PELs) address routine impacts to workers only and do not apply to the public. The IDLH levels pertain to emergency levels that dictate immediate worker evacuation or the wearing of appropriate Personal Protective Equipment (PPE), including respirators and protective clothing if skin absorption is a route of exposure, and for emergency first responders to establish their Command and Control location. Cal OSHA PELs and IDLHs are both inadequate to protect the general public and should not be used as a public health threshold because they are developed for the workplace only and not for the general public whose exposure would be 24 hours per day 7 days a week. They do not account for sensitive receptors such as the elderly, the very young, a developing fetus, and early-in-life exposures. They do not account for people with pre-existing medical conditions or are temporarily ill. They are often based on worker occupational exposure measurements thus being limited

by the “healthy worker syndrome.” Additionally, OSHA standards often must consider feasibility of engineering controls which if found not to be feasible can result in the requirement for PPE such as respiratory protection, all of which would be infeasible for the general public to wear.

The AEGLs are chemical-specific values that were developed and updated by a federal advisory committee chartered by the U.S. EPA and involved collaboration with the National Research Council (NRC), other federal agencies (Department of Energy and Department of Defense), and private sector experts, to plan for and respond to rare, short-term releases of airborne chemicals such as during a chemical spill. They are used to estimate public health effects and identify hazard areas by comparing the concentration of a chemical to the AEGL levels for different exposure durations, which can range from 10 minutes to 8 hours. AEGLs are designed to be used for:

1. Emergency planning: AEGLs provide guidance for rare, short-term exposures to airborne chemicals to help protect the public in emergency situations.
2. Accidental chemical releases: They are used by emergency responders when dealing with events like chemical spills to help determine the severity of the hazard.
3. Public protection: The guidelines help identify areas where the concentration of a hazardous gas could cause discomfort, serious health effects, or life-threatening conditions, allowing for protective actions like evacuation or sheltering in place.
4. Assessing risk: AEGLs help in assessing the potential health effects on the general public, including sensitive populations like children and the elderly, from a one-time exposure to a chemical.

The different levels of an AEGL are as follows:

- **AEGL-1:** The concentration above which most people might experience notable discomfort or irritation, but the effects are temporary and not disabling.
- **AEGL-2:** The concentration above which serious, long-lasting health effects or irreversible health effects could occur, or an impaired ability to escape the situation.
- **AEGL-3:** The concentration above which there is a potential for life-threatening effects or death.

CEC staff uses the Cal OSHA PELs (permissible exposure limits) for routine occupational exposures, and the AEGL levels to determine significant impacts for workers due to short-term infrequent emergency events such as fires (see **Section 5.10, Public Health**, for impacts to the offsite public). Cal OSHA currently regulates worker exposure to BESS fire-related exposure through the

"General Duty Clause" found in California Labor Code Section 6400 and Section 6401. These statutes mandate that every employer must provide a safe and healthful workplace, free from recognized hazards, and must do everything reasonably necessary to protect the life and safety of employees. Currently, there is not a specific Cal OSHA standard that addresses BESS fires.

Furthermore, proposed COC **WORKER SAFETY-7** would require additional engineering and administrative controls including requiring the project owner to provide to DFD three sets of hand-held gas detectors capable of detecting CO, NO_2, and HF for distribution to fire stations of the DFD and the VFD that are most likely to respond to a BESS emergency. This would aid first responders in protecting themselves, the occasional onsite workers, and the offsite public and contribute to an informed decision regarding shelter in place or evacuation.

To address the *probability (frequency)* of a BESS anomaly causing off-gassing of TACs or a fire event occurring and impacting workers onsite or the public offsite, staff used data and an approach described in detail in **Appendix D, Dispersion and Frequency Analysis**, of this Staff Assessment. Looking at a five-year period from the years 2021 through 2025, and noting that this model of the LGES BESS was not commercially available until 2024, staff calculated a worst-case *frequency* of one incident in every 11 to 67 years. Note that this estimate involved older technology that lacked recent preventative engineering controls.

CEC staff also addressed the impact (consequences) of a BESS malfunction by assessing two hazard scenarios that might occur:

- off-gassing during a short-term thermal runaway without a fire; and
- off-gasses during a fire.

The results of CEC staff's detailed risk assessment of the potential for adverse effects on site workers, along with extensive engineering controls and administrative controls that protect worker safety and health, served as the basis for staff's evaluation and conclusions. CEC staff's analysis of potential offsite impacts from a BESS incident is presented in **Appendix D, Dispersion and Frequency Analysis**, and **Section 5.10, Public Health**, of this Staff Assessment, in which staff finds that the likelihood of a BESS incident exposing sensitive receptors to substantial pollutant concentrations is very low.

In summation, energy sources and storage are needed throughout the state to fulfill demand and balance the grid. Given that energy production or storage poses some small risk to the community and the environment, it is important to note that in comparison to gas-fired power plants, the use of utility-scale BESS (to store and redeploy electricity) has much less risk and lower impacts to both workers (some of which have died at gas-fired power plants due to fire, explosions, and high operating pressures) and the nearby offsite public. The

most recent data (see **Appendix D, Dispersion and Frequency Analysis**) shows for all utility-scale BESS types, the risk of thermal runaway is small. This small risk is largely attributable to older (pre-2023) technology. To date, in the United States, BESS incidents have only damaged equipment and there have been no confirmed reports of injuries or deaths from utility-scale BESS fires in the general public. It is noted that several firefighters have been injured in the past by utility-scale BESS fires. In other countries, there have been facility personnel injured or killed as a result of an indoor fire.

One of the issues raised by first responders is the need for the DFD to have real-time information for whether to order a shelter-in-place or evacuation. Any additional tool providing information during an incident will greatly benefit the fire department. Also, public concerns and those of other state agencies obtained during CEC outreach, include questions regarding enhanced state-of-the-art detection of toxic air contaminants (TACs) released by a BESS when off-gassing or during a fire, and their airborne concentrations at distant locations when dispersed. Early and continuous detection is of the utmost importance in protecting first responders, worker safety and health for those times when they are on the site conducting maintenance and repairs, and for the public who live nearby.

These issues have been discussed in this section, and in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, **Section 5.10, Public Health**, and **Appendix D, Dispersion and Frequency Analysis**. Staff reviewed the best methods for early detection of compounds in a gaseous plume emitted from a BESS unit, including portable sensors, fixed perimeter sensors, open-path detectors such as long-range optical remote sensing using UV, IR, or laser, as per U.S. EPA TO-16 (U.S. EPA 1999; Schill 2022), and the use of a drone equipped with sensors. All have limitations. Portable sensors proposed to be provided to the DFD in COC **WORKER SAFETY-7**, place the first responders near the source of gaseous and particulate emissions and a fire. These are good for determining the ground level concentrations of gases only and there would not be enough of them to test the area around homes and at the site simultaneously. Fixed perimeter sensors are not useful due to varying wind directions; if the wind is blowing in the wrong direction, a fixed perimeter monitor would be useless. Open path detectors mounted at the fenceline could miss the plume entirely if the plume rise was greater than the height of the detectors, and more importantly, these systems measure total column concentrations rather than localized, point-source density, making it difficult to determine the exact distance or volume of a release. A drone does not have any of these limitations.

CEC staff has determined that use of a drone equipped with sensors is the best approach and would be able to detect and transmit airborne concentrations at almost any location in real-time (EPA 2026). The drone would only be limited by

its maximum altitude (approximately 100-400 feet depending upon the jurisdictional limit and the desire to detect small releases of off-gassing), and its operational time aloft. It can also be re-positioned quickly. Chemical sensing drone technology has matured over the past few years and is touted by the U.S. EPA (U.S. EPA 2023; U.S. EPA 2026), industry (Choudry 2023; GNSS.AE 2025), and the Australian Fire and Rescue Service New South Wales State now uses them (https://www.youtube.com/watch?v=VXj7qbYJTQ8). And finally, the U.S. EPA has used the Kolibri, an air emission sensor/sampler instrument system, on 34 field research applications across the United States and Canada since 2016 (EPA 2024). Clearly, chemical detection drones are ready for use and several vendors supply them with sensors selected by the purchaser.

Based upon the testing and observational studies discussed above, staff initially recommends that the drone be cable of detecting the airborne concentrations of CO, NO_2, and HF. NO_2 and HF are the two most important toxic air contaminants that have the potential to cause the greatest hazard and CO is an important consideration for first responders and workers who may be on the site. Therefore, CEC staff proposes COC **WORKER SAFETY-10** which would require the project owner to supply the DFD a drone and yearly maintenance of that drone.

Based on the discussion above and with the engineering and safety controls proposed by the applicant and those proposed in COCs **WORKER SAFETY-1** through **WORKER SAFETY-10**, CEC staff concludes that the risks to workers during both construction of the facility and operation of the BESS that would require an occasional presence of workers on the site, would be less than significant.

Fire, Rescue and Emergency Medical Services Response

In the past, CEC staff conducted a statewide survey to determine the frequency of emergency medical services (EMS) response and offsite fire-fighter response for CEC projects in California. The purpose of the analysis was to determine what impact, if any, new CEC projects could have on local emergency services. CEC staff concludes that incidents at CEC projects that require fire, rescue, or EMS response are infrequent and represent an insignificant impact on the local fire departments, except for those instances where a rural fire department has a staff of mostly volunteer firefighters or where the local fire department has less than the standard response times due to the lack of resources such as firefighters, equipment, and stations for the area covered.

CEC staff reviewed the information provided by the applicant to determine if the available DFD fire protection services and equipment would be adequate to protect workers, and to determine the project's impact on fire protection services in the area. The project would rely on both on-site fire protection systems and

local fire protection services. The on-site fire protection systems provide the first line of defense for small non-electrical fires. In the event of a major fire, fire support services, including trained firefighters and equipment for a sustained response, would be provided by the DFD under all conditions. Staff has reviewed and assessed the information available and discussed emergency response capabilities with the DFD. For the reasons discussed in the Cumulative Impacts section (below), staff finds adequate resources and does not propose mitigation.

CEC staff has also determined that the potential for both work-related and non-work-related heart attacks exists at CEC licensed projects. CEC staff's research on the frequency of EMS response to CEC projects shows that many of the responses for cardiac emergencies involved non-work-related incidents, including those involving visitors. CEC staff finds that the quickest medical intervention for cardiac emergencies can only be achieved with the use of an on-site automatic external defibrillator (AED). Therefore, staff concludes that it is appropriate for the project owner to maintain an AED on site in order to treat cardiac emergencies resulting from industrial accidents or other non-work-related causes. CEC staff proposes COC **WORKER SAFETY-5**, which would require that this portable AED be located on site, all employees on site during operations be trained in its use, and that supervisory workers on site during construction and commissioning also be trained in its use.

Non-Jurisdictional Project Components

Non-jurisdictional project components of the proposed project (Downstream Network Upgrades) include a short segment of the gen-tie line, a substation bay dead-end transmission structure, and expansion of a 500 kV breaker-and-a-half with a new circuit breaker, to be constructed and owned by PG&E.

These upgrades would be made by PG&E and are not within the CEC's licensing authority. Major utilities such as PG&E have extensive experience with the types of workplace activities involved with the proposed upgrades. PG&E is also experienced with regulations applicable to worker protection and has extensive worker safety plans and procedures to protect their employees from workplace hazards. CEC staff concludes that the proposed upgrades would, for the most part, not require significant levels of service from the local fire department and would not result in significant impacts on local fire protection services in the project area. Standard occupational safety and health programs and fire protection measures would be followed, and CEC staff does not propose mitigation for the operation and maintenance of these downstream network upgrades.

Cumulative Impacts

CEC staff reviewed 156 projects within a 6-mile radius of the proposed project location in **Appendix A, Cumulative Scenario**, of which only one would be an

energy-related project (Vaca Dixon Power Center Project) that could have the potential for a cumulative or direct impact with the DFD. The DFD stated that it is adequately staffed and equipped to respond to most emergencies at the project; however, if a BESS fire were to occur, with its magnitude of impacts on the DFD dependent upon the duration of the fire, the drawdown of resources for a continued time and the lack of a suitable number of water tenders within the department would pose a problem. However, despite the position of the DFD, and based upon CEC staff's experience and analysis of the issues, CEC staff has concluded that a direct impact would not be posed by the operation of the Corby project. The factors that staff based its conclusion on include the proposed requirement for the project owner to provide an adequate fire water supply via the potential provision of an additional water tender or water tank, staff's calculation in **Appendix D, Dispersion and Frequency Analysis**, that the overall frequency of a BESS fire would be once every 11 to 67 years, the aforementioned robust mutual aid available, and the current fire response standard of letting the unit on fire burn itself out while being closely monitored by a small fire department contingent.

Furthermore, CEC staff has concluded that a cumulative impact would also not be posed with the concurrent operation of the Vaca Dixon Power Center Project. The basis of this determination lies mainly with the fact that although the two projects are very close to each other, they are located in separate fire department jurisdictions.

4.4.3 Applicable LORS and Project Conformance

Table 4.4-2 contains CEC staff's determination of conformance with applicable local, state and federal LORS, including any proposed conditions of certification, where applicable, to ensure the jurisdictional components of the project would comply with LORS. As shown in this table, staff concludes that with implementation of specific conditions of certification, the proposed project would be consistent with all applicable LORS. The subsection at the end of this section, "Proposed Conditions of Certification," contains the full text of the referenced conditions of certification.

TABLE 4.4-2 COMPLIANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Title 29 U.S. Code (USC) section 651 et seq. (Occupational Safety and Health Act of 1970)	**Yes.** COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** require that the project owner develop and implement occupational safety and health programs to prevent worker injuries during construction, commissioning, and operations. COCs **WORKER SAFETY-3** and **WORKER SAFETY-4** requires the project owner to

TABLE 4.4-2 COMPLIANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	implement an additional layer of worker safety during construction.
Title 29 CFR sections 1910.1 to 1910.1500 (Occupational Safety and Health Administration Safety and Health Regulations)	**Yes.** COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** require that the project owner develop and implement occupational safety and health programs to prevent worker injuries during construction, commissioning, and operations. COCs **WORKER SAFETY-3** and **WORKER SAFETY-4** requires the project owner to implement an additional layer of worker safety during construction. COCs **WORKER SAFETY-5** and **WORKER SAFETY-6** requires the project owner to implement an additional layer of worker safety during construction, commissioning, and operations.
State	
CCR, Title 8, all applicable sections (Cal OSHA regulations) including CCR: Subchapter 4: Construction Safety Orders. tit. 8, §§ 1920 – 1928 Fire Detection and Prevention; Subchapter 5: Low and High Voltage Electrical Safety Orders; and specifically tit. 8, §§ Subchapter 7: General Industry Safety Orders; and specifically tit. 8, §§: 3203 – Injury and Illness Prevention Program; 3314 Control of Hazardous Energy Lockout/Tagout; 3395 & 3396 Heat Illness Prevention Programs; 5141.1 Protection from Wildfire Smoke 5184 Storage Battery Systems; 5185 6150-6154 Fire Protection	**Yes.** CEC staff's assessment below recognizes and lists many of the most important Cal OSHA worker safety and health programs, and COCs **WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-3, WORKER SAFETY-4, WORKER SAFETY-5, WORKER SAFETY-6, WORKER SAFETY-8, WORKER SAFETY-9**, and **WORKER SAFETY-10**, impose specific conditions to ensure compliance with Title 8, as well as Health & Safety Codes for Fire Protection as shown in COCs **WORKER SAFETY-1, WORKER SAFETY-2**, and **WORKER SAFETY-7**.
California Code, Health and Safety Code - HSC § 13146.2 (a) Every city, county, or city and county fire department or district providing fire protection services required by Sections 13145 and 13146 to enforce building standards adopted by the State Fire Marshal and other regulations of the State Fire Marshal shall, annually, inspect all structures subject to subdivision (b) of Section 17921, except dwellings, for compliance with building standards and other regulations of the State Fire Marshal.	**Yes.** CEC staff's assessment recognizes the need for additional fire protection for the BESS as shown in COCs **WORKER SAFETY-7, WORKER SAFETY-8**, and **WORKER SAFETY-9**.

TABLE 4.4-2 COMPLIANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
California Fire Code Chapter 12 Chapter 12 governs the placement and fire prevention of battery energy storage systems. California Public Utilities Code 761.3 section (g) "SB 38" added safety requirements of battery storage projects. It requires every battery energy storage facility in California to have an emergency response and emergency action plan that cover the premises of the facility, consistent with emergency action plans in CCR, Title 8. The owner or operator of the facility must coordinate with local emergency management agencies, unified program agencies, and local first responders to develop the plan and must submit the plan to the county and, if applicable, the city where the facility is located. CPUC GO 167-C establishes standards for electric generating facilities to ensure that they are effectively maintained and operated to ensure safe and reliable service.	
Local	
International Fire Code as adopted into the 2022 California Fire Code and Orange County Ordinance including the July 2024 amendment	**Yes.** See discussion on the fire authority.
General	
National Fire Protection Association (NFPA) 855	**Yes**. COC **WORKER SAFETY-6** requires adherence to NFPA 855 industry standards.

4.4.4 Conclusions and Recommendations

As discussed above, with implementation of the COCs, including if the project owner provides a Project Construction Health and Safety Program and a Project Operations and Maintenance Health and Safety Program as required by COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** and fulfills the requirements of COCs **WORKER SAFETY-3** through **WORKER SAFETY-10**, the project would incorporate adequate levels of industrial safety and comply with applicable LORS.

CEC staff have concluded that the COCs are sufficient to reduce impacts, and the proposed project would not contribute to a cumulatively considerable impact related to worker safety and fire protection. CEC staff recommends adopting the conditions of certification as detailed in subsection "4.4.5 Proposed Conditions of Certification" below.

Impacts associated with non-jurisdictional project components do not require mitigation to reduce impacts to less than significant.

4.4.5 Proposed Conditions of Certification

WORKER SAFETY-1 The project owner shall submit to the CPM a copy of the Project Construction Health and Safety Program containing the following:

- a Construction Personal Protective Equipment Program;
- a Construction Exposure Monitoring Program;
- a Construction Injury and Illness Prevention Program;
- a Construction Emergency Action Plan that fulfills the requirements of California Public Utilities Code section 761.3(g);
- an Emergency Response Plan; and
- a Construction Fire Prevention Plan that includes methods of access for emergency responders through three locked gates.

The Personal Protective Equipment Program, the Exposure Monitoring Program, and the Injury and Illness Prevention Program, shall be submitted to the CPM for review and approval concerning compliance of the program with all applicable safety orders. The Construction Emergency Action Plan, Construction Emergency Response Plan, and the Fire Prevention Plan shall be submitted to the DFD for review and comment prior to submittal to the CPM for approval.

Verification: At least 90 days prior to the start of construction, the project owner shall submit to the CPM for review and approval a copy of the Project Construction and Safety and Health Program. The project owner shall provide to the CPM a copy of letters from the DFD detailing resolved comments on the Construction Fire Prevention Plan, the Emergency Action Plan, and Emergency Response Plan.

WORKER SAFETY-2 The project owner shall submit to the CPM a copy of the Project Operations and Maintenance Safety and Health Program containing the following items:

1. An Operation Injury and Illness Prevention Plan.
2. An Operations Weed Management Plan that is consistent with COC **BIO-7** which requires: 1) an avoidance of the use of toxic substances; 2) the use of soil bonding and weighting agents which are non-toxic to wildlife and plants; 3) a prohibition on the use of anticoagulants for rodent control; 4) a prohibition on the use of pre-emergent and other herbicides with documented residual toxicity; and 5) a directive that herbicides shall be applied in conformance with federal, State, and

local laws and according to the BMPs for wildlife-safe use of herbicides.

3. An Operations Emergency Action Plan that that fulfills the requirements of California Public Utilities Code 761.3 section (g).
4. An Operations Emergency Response Plan.
6. A Hazardous Materials Management Program.
7. A Fire Prevention Plan (CCR, tit. 8, § 3221) that includes methods of access for emergency responders through three locked gates.
8. A Fire Protection System Impairment Program.
9. A Personal Protective Equipment Program (CCR, tit.8, §§ 3401-3411).

The Operation Injury and Illness Prevention Plan, Hazardous Materials Management Program, Emergency Action Plan, Emergency Response Plan, Fire Prevention Plan, Fire Protection System Impairment Program, and Personal Protective Equipment Program shall be submitted to the CPM for review and approval concerning compliance of the programs with all applicable safety orders. The Fire Prevention Plan, Fire Protection System Impairment Program, and the Emergency Action Plan shall also be submitted to the DFD for review and comment.

Verification: At least 30 days prior to the start of commissioning, the project Operations and Maintenance Safety and Health Program. The project owner shall provide a copy to the CPM of letters from the DFD detailing the resolved comments on the Operations Fire Prevention Plan, Fire Protection System Impairment Program, and Emergency Action Plan.

WORKER SAFETY-3 The project owner shall provide a site Construction Safety Supervisor (CSS) who, by way of training and/or experience, is knowledgeable of BESS construction and relevant worker safety-related LORS. The CSS shall be capable of identifying workplace hazards relating to the construction activities; and has authority to take appropriate action to ensure compliance and mitigate hazards. The CSS shall:

- have overall authority for coordination and implementation of all occupational safety and health practices, policies, and programs;
- ensure that the safety program for the project complies with Cal OSHA and federal regulations related to industrial battery energy storage system projects;
- ensure that all construction and commissioning workers and supervisors receive adequate safety training;

- conduct accident and safety-related incident investigations and provide emergency response reports for injuries, and inform the CPM of safety-related incidents; and
- ensure that all the plans identified in COC **WORKER SAFETY-1** and **WORKER SAFETY-2** are implemented.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM the name, contact information, and credentials for the CSS. The contact information of any replacement CSS shall be submitted to the CPM within one business day. The CSS shall submit in the Monthly Compliance Report (MCR) a monthly safety inspection report to include:

- a record of all employees trained for that month (all records shall be kept on site for the duration of the project);
- summary report of safety management actions and safety-related incidents that occurred during the month;
- report of any continuing or unresolved situations and incidents that may pose danger to life or health;
- report of any visits from Cal OSHA and/or any complaints from workers to Cal OSHA; and
- report of accidents, injuries, and near misses that occurred during the month.

WORKER SAFETY-4 The project owner shall make payments to the DCBO for the services of a Safety Monitor based upon a reasonable fee schedule to be negotiated between the project owner and the DCBO. Those services shall be in addition to other work performed by the DCBO. The Safety Monitor shall be selected from an independent company not affiliated with the DCBO and report directly to the DCBO and would be responsible for verifying that the CSS, as required in COC **WORKER SAFETY-3**, implements all appropriate Cal OSHA and CEC safety requirements. The Safety Monitor shall conduct on-site (including linear facilities) safety inspections at intervals necessary to fulfill those responsibilities.

Verification: At least 60 days prior to the start of construction, the project owner shall provide proof of its agreement to fund the Safety Monitor services to the CPM for review and approval.

WORKER SAFETY-5 The project owner shall ensure that a portable AED is located on site during construction, commissioning, and operations and shall implement a program to ensure that workers are properly trained in its use and that the equipment is properly maintained and functional.

During construction and commissioning the following persons shall be trained in its use and shall be on site whenever the workers that they supervise are on site: the Construction Project Manager or delegate, the CSS or delegate, and all shift foremen. During operations, all project employees on site shall be trained in its use. The training program shall be submitted to the CPM for review and approval.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit to the CPM proof that a portable AED is available to be made available on site as soon as physically possible along with a copy of the training and maintenance program for review and approval.

WORKER SAFETY-6 The project owner shall adhere to all applicable provisions of the latest version of National Fire Protection Association (NFPA) 855: Standard for the Installation of Stationary Energy Storage Systems, as the minimum level of safety for the BESS. The project owner shall interpret and adhere to all applicable NFPA 855 recommended provisions and actions stating "should" as "shall", except when referring to fire departments. In any situations where both NFPA 855 and the state or local LORS have application, the more restrictive shall apply.

Verification: The project owner shall ensure that the project adheres to all applicable provisions of NFPA 855. At least 90 days prior to the start of construction of the BESS, the project owner shall provide all system specifications and design drawings to the DFD for review and comment, to the CPM for review and approval, and to the DCBO for plan check approval and construction inspection.

WORKER SAFETY-7 The project owner shall do the following at the BESS facility:

a. Require that lithium-ion batteries be shipped from the factory to the project site at a State of Charge (SOC) of less than or equal to 30 percent;

b. Provide fire lanes down the length and width of the BESS units with a 30-ft minimum width of all roads, and a turning basin with a 58 ft inner radius, in alignment with applicable requirements of CFC Section 503 and DFD codes;

c. Provide at least three gates for normal and emergency access into the facility (two for the BESS area) wide enough for emergency access and equipped with Knox Box or equivalent in alignment with CFC § 506;

d. Design any box culverts and low-water crossings that may be placed on the site to meet county roadways requirements;

e. Install remote fire sensors at sufficient locations to cover the entire facility;

f. Equip each BESS unit with fire detection warnings including a flammable gas detection system, a smoke detection system, and strobes and audible alarm;

g. Equip each unit with a backup power supply for at a minimum the Fire Alarm Control Panel (FACP), smoke detection, alarm notification, external horn and strobe, fire and gas detection, and intake damper and ventilation fan system;

h. Equip the BESS yard with thermal imaging cameras capable of covering all BESS units;

i. Install closed-circuit television (CCTV) cameras with Pan, Tilt, Zoom (PTZ), and low-light capability that cover the entire area of the BESS and which would have their own separate power supply, and which complies with NERC CIP-011-1;

j. Establish and implement a written Command and Control Protocol in accordance with the Emergency Response Plan for project staff to perform emergency duties and responsibilities during the detection, initiation, and escalation of a BESS fire;

k. In consultation with the DFD when there is off-gassing or a fire from a BESS unit, establish a mobile Command and Control Center located at a safe distance from the BESS facility (upwind and not less than 330 feet) that provides monitors for BMS telemetry, remote fire or heat sensors, fire alarm monitoring and allows for first responders to contact the project owner immediately, or alternatively, ensure that a representative of the project owner is able to arrive on the site within 15 minutes of a warning that a cell is undergoing rapid temperature rise and that this person would be equipped with a laptop computer with access to all telemetry data from each cell, module, and unit, and that all remote telemetry and CCTV viewing in a Command and Control Center complies with NERC CIP-011-1;

l. Prepare and submit a Root Cause analysis of any incident at the BESS facility (including but not limited to fire, malfunction, leak, or thermal runaway of any cell, module, or unit), along with any and all documents, evidence and other information used to prepare the Root Cause analysis to the CPM;

m. In consultation with the DFD, provide to DFD and Vacaville Fire Department, three sets of hand-held gas detectors capable of detecting CO, NO_2, and HF for distribution to DFD Station #81 and VFD #65 and #72;

n. Consult with the DFD in preparing the fire protection system specifications and drawings to ensure that an adequate water supply (compliance with NFPA 1142 rural supply standards) and hydrant connection(s) are available for life safety fire suppression for the BESS facility as well as for ancillary structures and provide for any DFD-required infrastructure, including but not limited to, additional water tanks, hydrants, fittings, fire water monitors, water tenders; and

o. If the project owner decides to revise the choice of BESS manufacturer installed, all of the above requirements shall remain in effect for the new selection. The project owner shall provide any required new information required above plus the specific UL9540 certification and UL9540A third party test results for the new BESS manufacturer to the CPM for review and approval.

Verification: At least 60 days prior to the start of construction, the project owner shall provide all the information and or equipment required above (except for items k and l) to the DFD for review and comment, to the CPM for review and approval, and to the DCBO for plan check approval and construction inspection.

Within 10 days of an incident at the BESS facility (including but not limited to fire, malfunction, leak, or thermal runaway of any cell, module, or unit) the project owner shall notify the CPM that a Root Cause Analysis (RCA) is being prepared. The project owner shall work with the CPM to determine a submission date for the completed RCA. The RCA shall be submitted to the DFD for review and comment, and to the CPM for review and approval.

In the event the project owner decides to select different battery energy storage systems to be used on this project, all required updated information shall be provided to the CPM as soon as practicable but no later than 120 days before the start of new BESS construction for review and approval and to the DCBO for plan check approval and construction inspections.

WORKER SAFETY-8 The project owner shall provide initial BESS fire training for the DFD and establish and provide an annual joint training program with the DFD that includes table-top exercises for a BESS fire.

Verification: At least 30 days prior to the start of commissioning, the project owner shall provide a copy to the CPM of the written fire department training program, a statement of the date and location the training took place, a copy of the written joint training exercise, the date of the first

annual joint training exercise, and the date of the next annual joint training exercise.

WORKER SAFETY-9 The project owner shall develop and implement during construction a worker Valley Fever Prevention and Response Plan that includes an enhanced Dust Control Plan containing the requirements described in **AQ-SC3** and additionally requires:

1. The mandatory on-site use of earth moving and excavating equipment with environmental cabs (with AC and HEPA filters);
2. Mandatory site worker use of dust masks (NIOSH N-95 or better) in areas where active trenching occurs, even if dust is not visually detected present;
3. Implementation of enhanced dust control methods, such as increased frequency of watering to no less than three (3) times each day at locations where active trenching is conducted and/or the use of dust suppression chemicals consistent with COC **AQ-SC3** and **AQ-SC4**, immediately whenever visible dust comes from or onto the site;
4. Specific training on Valley Fever as per Labor Code Section 6109 which requires that employers shall provide effective awareness training on Valley Fever to all employees before work begins and annually by that date thereafter;
5. Medical referral protocol; and
6. Reporting of medically-diagnosed cases to the California Department of Public Health, Cal OSHA, and the CPM.

Verification: At least 60 days prior to the commencement of site mobilization, the Valley Fever Prevention and Response Plan shall be provided to the CPM for review and approval.

WORKER SAFETY-10 The project owner shall purchase and give to the DFD a drone capable of detecting toxic air contaminants including NO_2, CO, and HF and having visual inspection capability, for use when suspected off-gassing from a BESS unit occurs, and during a BESS fire. The project owner shall also provide the DFD with funds for updated software and routine maintenance, when necessary, and replacement if necessary for the life of the Corby project.

Verification: At least 60 days prior to the start of commissioning, the project owner shall provide the specifications of its proposed drone to the CPM for review and approval. Upon approval, the project owner shall provide proof of purchase and delivery of the drone to the DFD prior to the start of commissioning.

4.4.6 References

ABC News 2024. "*Semi-truck carrying lithium-ion batteries overturns, sparks fire in San Pedro.*" September 27. Accessed online at: https://abc7.com/post/semi-truck-carrying-lithium-ion-batteries-overturns-sparks-fire-san-pedro/15360889/

American Clean Power, 2023. "*Claims vs. Facts: Energy Storage Safety*". December. Accessed online at: https://cleanpower.org/wp-content/uploads/gateway/2023/12/ACP_Energy-Storage-Leading-on-Safety_FactSheet.pdf

Brand, M., et al, 2013. *"Electrical safety of commercial Li-ion cells based on NMC and NCA technology compared to LFP technology."* World Electric Vehicle Journal Vol. 6 - ISSN 2032-6653.

CAL OSHA 2024 – California Occupational Safety and Administration. 2024. "Protection from Valley Fever." Accessed online at: https://www.dir.ca.gov/dosh/valley-feverhome.html

Caltrans 2024. Caltrans Statement on San Bernardino County I-15 Fire**.** Published July 28**.** Accessed online at: https://dot.ca.gov/news-releases/news-release-2024-027

CDPH 2025 – California Department of Public Health 2025. "Valley Fever in California Year-end Data Dashboard" Accessed in September 2025. Accessed online at: https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/ValleyFeverDashboard.aspx

Choudry, Rizwan 2023. "*Drones lead the way in real-time air quality checks*." Interesting Engineering. Accessed online at: https://interestingengineering.com/innovation/drones-lead-the-way-in-real-time-air-quality-checks

CLC 2021 – Section 6709 of the California Labor Code. Effective January 1, 2019. Accessed online at: https://leginfo.legislature.ca.gov/faces/codesdisplaySection.xhtml?lawCode=LAB&sectionNum=6709

CPUC 2025 – California Public Utilities Commission RESOLUTION ESRB-13 – Adopts General Order (GO) 167-C, Enforcement of Maintenance and Operation Standards for Electric Generating Facilities and Energy Storage Systems. Dated March 13, 2025. Accessed online at: https://www.cpuc.ca.gov/news-and-updates/all-news/cpuc-sets-new-safety-standards-and-enhances-oversight-of-emergency-plans

DOE National Renewable Energy Laboratory 2023. Denholm, Paul, Wesley Cole, and Nate Blair. *Moving Beyond 4-Hour Li-Ion Batteries: Challenges and*

Opportunities for Long(er)-Duration Energy Storage. Section 2.0. Golden, CO: National Renewable Energy Laboratory. NREL/TP-6A40-85878.

DOT 2024 – United States Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration. 2024 Emergency Response Guidebook. Accessed on: May 2026. Accessed online at: https://www.phmsa.dot.gov/training/hazmat/erg/emergency-response-guidebook-erg

EPA 1999. Compendium Method TO-16 Long-Path Open-Path Fourier Transform Infrared Monitoring Of Atmospheric Gases. Accessed online at: https://www.epa.gov/sites/default/files/2019-11/documents/to-16r.pdf

EPA 2023. "*The Future of Emissions Testing is Looking Up: How EPA is Using Drones to Test Air Quality.*" Accessed online at: https://www.epa.gov/sciencematters/future-emissions-testing-looking-how-epa-using-drones-test-air-quality

U.S. EPA 2024. Fact sheet. Available on-line at: https://www.epa.gov/system/files/documents/2024-10/kolibri-fact-sheet-2024.pdf

U.S. EPA 2026. EPA Unmanned Aircraft Systems (UAS) Program. April. Accessed online at: https://www.epa.gov/geospatial/epa-unmanned-aircraft-systems-uas-program

Energy Storage News 2023. "*Terra-Gen to investigate cause of Valley Center California BESS fire with 'incident over'*." September 19. Accessed online at: https://www.energy-storage.news/terra-gen-to-investigate-cause-of-valley-center-battery-storage-fire-with-incident-over/

EPRI 2024a – Electric Power Research Institute (EPRI). "Insights from EPRI's Battery Energy Storage Systems (BESS) Failure Incident Database: Analysis of Failure Root Cause." White Paper. Dated May 10, 2024. Accessed online at: https://www.epri.com/research/products/000000003002030360?8729b241_page=7

EPRI 2024b. "*An EPRI Perspective: Lithium Ion Battery Energy Storage Fire Safety Measures*." September. Accessed online at: www.epri.com

EPRI 2026. BESS_Failure_Incident_Database BESS Failure Incident Database - EPRI Storage Wiki. Accessed online at: https://storagewiki.epri.com/index.php/BESS_Failure_Incident_Database

EticaAG 2025. Tesla BESS Fire at California Flats Solar Project. Accessed online at: https://eticaag.com/tesla-bess-fire-at-monterey-county-solar-farm/

Evlithium 2025. *LFP vs NMC Batteries: Who's The Real Winner?* Accessed online at: https://www.evlithium.com/Blog/lfp-vs-nmc-batteries-comparison.html

GNSS.AE 2025. "*Drones Applications in Air Monitoring and Pollution Detection*". Accessed online at: https://gnss.ae/advanced-air-quality-monitoring-solutions-addressing-critical-environmental-challenges/

GO-Biz 2025 – Governor's Office of Business and Economic Development (GO-Biz). GO-Biz Clean Energy Permitting Toolkit BESS Model Ordinance and Guide. Accessed on: May 2026. Accessed online at: https://business.ca.gov/industries/climate-and-clean-energy/go-biz-renewable-energy-permitting-initiative/#

Jensen Hughes, Inc. 2024. "*White Paper: Advancing Li-Ion Bess Safety: Comprehensive Testing And Meta-Analysis For Optimized Hazard Mitigation."* Accessed online at: https://www.jensenhughes.com/

Kaliaperumal, M. et al. 2021. "*Cause and Mitigation of Lithium-Ion Battery Failure—A Review.*" Materials 14, 5676. Accessed online at: https://doi.org/10.3390/ma14195676

KSBY 2025. "*UPDATE: Authorities release new details on solar farm fire in Monterey Co*." August 31. Accessed online at: https://www.ksby.com/news/california-news/solar-farm-fire-prompts-evacuations-in-monterey-co-traffic-control-on-hwy-41

LG Energy Solution Energy Storage System (ESS) Product Safety Guide. Accessed online at: https://www.lgensol.com/assets/file/LG_Energy_Solution_ESS_Safety_Guide_EN.pdf

Massachusetts Department of Public Health, & Massachusetts Department of Fire Services. 2025. *Toxicology of the lithium-ion battery fire*. Accessed online at: https://www.mass.gov/doc/toxicology-of-the-lithium-ion-battery-

McMicken 2020 – "Battery Energy Storage System Event, Technical Analysis and Recommendations, Arizona Public Service." Prepared by DNV GL. Dated July 18, 2020. Accessed online at: https://www.aps.com/en/About/Our-Company/Newsroom/Articles/Equipment-failure-at-McMicken-Battery-Facility

Menye, Joselyn Stephane et al., 2025. *"Lithium Battery Degradation and Failure Mechanisms: A State-of-the-Art Review.*" Energies,18, 342. Accessed online at: https://doi.org/10.3390/en18020342

MMWR (Morbidity and Mortality Weekly Report) 2020. October 23. Accessed at doi:10.15585/mmwr.mm6942a2

Insurance Information Institute (NIII 2025). Accessed online at: https://www.iihs.org/research-areas/fatality-statistics

Labella 2026 – Labella Associates. Battery Fire Air Monitoring Synopsis: Convergent Energy & Power's Church Street Battery Storage Facility;

Accessed on: May 21, 2026. Accessed online at: https://villageofwarwickny.gov/wp-content/uploads/BESS_Fire_Air_Monitoring_Synopsis_Revised.pdf

National Safety Council 2025. NSC Injury Facts, Odds of Dying. Accessed online at: https://injuryfacts.nsc.org/all-injuries/preventable-death-overview/odds-of-dying/

Orange County Register 2024. "Fire at Santa Ana energy storage facility prompts temporary evacuations in industrial area". July 17. Accessed online at: https://www.ocregister.com/2024/07/17/fire-at-energy-storage-facility-prompts-evacuations-in-industrial-area-of-santa-ana/

PHMSA 2018 – Pipeline and Hazardous Materials Safety Administration, United States Department of Transportation. Lithium Battery Packaging Evaluation – FAA Reauthorization Act of 2018. Accessed online at: https://www.phmsa.dot.gov/standards-rulemaking/hazmat/lithium-batterypackaging-evaluation-faa-reauthorization-act-2018

PHMSA 2024. "Pipeline Incident 20 Year Trends." Accessed online at: https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends

Pipeline Safety Trust 2022. Accessed online at: https://pstrust.org/ca-pge-pipeline-analysis-2010-2021/

San Diego Union-Tribune 2024. "*Government Tech: After Fires, Calif. County to Set Battery Storage Standards*". July 18. Accessed online at: https://www.govtech.com/products/after-fires-calif-county-to-set-battery-storage-standards

Schill, R., et al., 2022. "*Real-World Application of Open-Path UV-DOAS, TDL, and FT-IR Spectroscopy for Air Quality Monitoring at Industrial Facilities*". Spectroscopy 37, pgs 11-22 Accessed online at: https://www.spectroscopyonline.com/view/real-world-application-of-open-path-uv-doas-tdl-and-ft-ir-spectroscopy-for-air-quality-monitoring-at-industrial-facilities

Scentroid 2026. "*Meet the Future of Sensory Technology*". Accessed online at: https://scentroid.com/products/analyzers/dr1000-flying-lab/

SDG&E 2024a. Update on Escondido Battery Storage Incident - Sept. 6 at 1:59 pm. Accessed online at: https://sdgetoday.com/news/update-escondido-battery-storage-incident-sept-6

SDG&E 2024b. Update on Escondido Battery Storage Incident September 6, 2024 - 11:33 am *Updated as of Sept. 7, 12:30 p.m.* Accessed online at: https://www.sdgetoday.com/news/update-escondido-battery-storage-incident

WildfireRisk.Org 2026. Accessed online at: https://apps.wildfirerisk.org/explore/risk-to-homes/06/06095#:~:text=High.%20Homes%20in%20Solano%20County%20have%2C%20on,a%20home%20actually%20exists%20there%20or%20not

USGS 2026. "*Probability that an earthquake would occur in the Los Angeles Area*." Accessed online at: https://www.usgs.gov/faqs/what-probability-earthquake-would-occur-los-angeles-area-san-francisco-bay-area?qt-news_science_products=0#qt-news_science_products

Tran, M-K, et al, 2021. "*Comparative Study of Equivalent Circuit Models Performance in Four Common Lithium-Ion Batteries: LFP, NMC, LMO, NCA*." Batteries, 7 (3), 51. Accessed online at: https://doi.org/10.3390/batteries7030051

TT 2026b – Tetra Tech (TN 268367). Project Description Update #2, Part 1, Appendix 2-B. Dated January 30, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026e – Tetra Tech (TN 268433). Project Description Update #2, Part 2. Dated February 2, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026g – Tetra Tech (TN 268540). Application Section 2 Project Description markup file. Dated February 9, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

UL Solutions 2023 – UL Solutions. Fire Risk Assessment. Accessed in August 2023. Accessed online at: https://www.ul.com/services/portfolios/fire-safety

Vinfastauto. 2024 – "The fire rate of electric vehicles is 61 times lower than that of gasoline vehicles". Accessed online at: https://community.vinfastauto.us/driving/the-fire-rate-of-electric-vehicles-is-61-times-lower-than-that-of-gasoline-vehicles/

Section 5

Environmental Impact Assessment

Under the California Environmental Quality Act (CEQA), the environmental setting of a project is generally the physical environmental conditions in the vicinity of the project as they exist at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced (CEQA Guidelines, § 15125(a)(1)). The environmental setting described in an EIR by the lead agency will normally constitute the baseline physical conditions by which the lead agency determines whether an impact is significant (CEQA Guidelines, § 15125(a)).

5.1 Air Quality

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to air quality. The air quality analysis focuses on criteria air pollutants, for which there are established ambient air quality standards for public health protection. Toxic air contaminants are addressed separately in **Section 5.10, Public Health**.

See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.1.1 Environmental Setting

Existing Conditions

Criteria Air Pollutants

The United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (CARB) have established ambient air quality standards (AAQS) for several pollutants based on their adverse health effects. The U.S. EPA has set national ambient air quality standards (NAAQS) for ozone (O_3), carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter of 10 micrometers or less in diameter (PM10), particulate matter of 2.5 micrometers and smaller in diameter (PM2.5), sulfur dioxide (SO_2), and lead (Pb). Primary standards were set to protect public health; secondary standards were set to protect public welfare against visibility impairment, damage to animals, crops, vegetation, and buildings. Sources of nitrogen oxides (NOx) and volatile organic compounds (VOC) or reactive organic gases (ROG) are also regulated as these pollutants are precursors to ozone formation through photochemical reactions in the ambient air. In addition, CARB has established California ambient air quality standards (CAAQS) for these pollutants, as well as for sulfates (SO_4), visibility reducing particles, hydrogen sulfide (H_2S), and vinyl chloride. CAAQS are generally stricter than NAAQS.

The ambient air quality standards currently in effect in California and nationally are shown in **Table 5.1-1**.

TABLE 5.1-1 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a]	National Standards [b] (Primary)	National Standards [b] (Secondary)
Ozone (O_3)	1 hour	0.09 ppm (180 µg/m^3)	—	Same as Primary Standard
	8 hours	0.070 ppm (137 µg/m^3)	0.070 ppm (137 µg/m^3)	
PM10	24 hours	50 µg/m^3	150 µg/m^3	Same as Primary Standard
	Annual Mean	20 µg/m^3	—	

TABLE 5.1-1 NATIONAL AND CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant	Averaging Time	California Standards [a]	National Standards [b] (Primary)	National Standards [b] (Secondary)
PM2.5	24 hours	—	35 µg/m^3	Same as Primary Standard
	Annual Mean	12 µg/m^3	9.0 µg/m^3 [c]	15 µg/m^3
CO	1 hour	20 ppm (23 mg/m^3)	35 ppm (40 mg/m^3)	—
	8 hours	9.0 ppm (10 mg/m^3)	9 ppm (10 mg/m^3)	—
Nitrogen Dioxide (NO_2)	1 hour	0.18 ppm (339 µg/m^3)	100 ppb (188 µg/m^3) [c]	—
	Annual Mean	0.030 ppm (57 µg/m^3)	0.053 ppm (100 µg/m^3)	Same as Primary Standard
Sulfur Dioxide (SO_2) [e]	1 hour	0.25 ppm (655 µg/m^3)	75 ppb (196 µg/m^3)	—
	3 hours	—	—	0.5 ppm (1,300 µg/m^3)
	24 hours	0.04 ppm (105 µg/m^3)	0.14 ppm (for certain areas) [e]	—
	Annual Mean	—	0.030 ppm (for certain areas) [e]	—

Notes:
- ppm=parts per million; ppb = parts per billion; µg/m^3 = micrograms per cubic meter; mg/m^3 = milligrams per cubic meter; "—" = no standard.
a California standards for O_3, CO (except 8-hour Lake Tahoe), SO_2 (1 and 24 hour), NO_2, and particulate matter (PM10, PM2.5, and visibility reducing particles), are values that are not to be exceeded. All others are not to be equaled or exceeded.
b National standards (other than O_3, PM, NO_2 [see note d below], and those based on annual arithmetic mean) are not to be exceeded more than once a year. The 8-hour O_3 standard is attained when the fourth highest 8-hour concentration measured at each site in a year, averaged over three years, is equal to or less than the standard. The 24-hour PM10 standard of 150 µg/m^3 is not to be exceeded more than once per year on average over a 3-year period. The 24-hour PM2.5 standard is attained when the 3-year average of 98th percentile concentration is less than or equal to 35 µg/m^3.
c On March 6, 2024, the U.S. EPA published a final rule to strengthen the annual PM2.5 NAAQS from 12.0 µg/m^3 to 9.0 µg/m^3 (U.S. EPA 2026b). See detailed discussion in the text.
d To attain the 1-hour national standard, the 3-year average of the annual 98th percentile of the 1-hour daily maximum concentrations at each site must not exceed 100 ppb.
e On June 2, 2010, a new 1-hour SO_2 standard was established, and the existing 24-hour and annual primary standards were revoked. To attain the 1-hour national standard, the 3-year average of the annual 99th percentile of the 1-hour daily maximum concentrations at each site must not exceed 75 ppb. The previous SO_2 standards (24-hour and annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which an implementation plan providing for attainment of the current (2010) standard has not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a SIP call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a U.S. EPA action requiring a state to resubmit all or part of its State Implementation Plan to demonstrate attainment of the required NAAQS.
Sources: CARB 2026b, U.S. EPA 2026a, U.S. EPA 2026b

On March 6, 2024, the U.S. EPA published a final rule to lower the primary annual PM2.5 NAAQS from 12.0 µg/m^3 to 9.0 µg/m^3 (U.S. EPA 2026b). The final revisions to the primary annual PM2.5 NAAQS trigger a process under which States (and Tribes, if they choose) make recommendations to the Administrator regarding designations, identifying areas of the country that either meet or do not meet the new or revised PM NAAQS. Those areas that do not meet the revised PM NAAQS will need to develop plans that demonstrate how they will meet the standards. Until the U.S. EPA designates an area with respect to the proposed revised PM2.5 NAAQS, the New Source Review (NSR) provisions applicable under an area's designation for the 1997, 2006, and 2012 PM2.5 NAAQS would continue to apply (U.S. EPA 2026b). States and Tribal Authorities were required to submit initial recommendations of areas that do not attain this standard (i.e., nonattainment areas) to U.S. EPA by February 2025, and U.S. EPA was required to finalize area designations by February 2026. However, in late 2025, the U.S. EPA asked the D.C. Circuit to vacate the 2024 PM2.5 standard, arguing they did not conduct a thorough enough review and missed considering compliance costs. Therefore, the timeline for designation remains uncertain. Despite the motion, the 2024 PM2.5 standard remains in effect while the case is pending. Staff's air quality analysis considers the 2024 PM2.5 NAAQS.

The air quality standards, shown in **Table 5.1-1**, are designed and established to be health protective. Air pollution can cause known health problems, especially for children, the elderly, and people with heart or lung problems. Healthy adults may experience symptoms during periods of intense exercise. Pollutants can also cause damage to vegetation, animals, and property. This analysis relies on the ambient air quality standards as health-based thresholds to help define what is considered a substantial pollutant concentration for the criteria air pollutants.

Attainment Status

The project is located within the boundaries of the Sacramento Valley Air Basin (SVAB). The SVAB encompasses all of Shasta, Tehama, Glenn, Colusa, Butte, Sutter, Yuba, Sacramento, and Yolo Counties; the westernmost portion of Placer County; and the northeastern half of Solano County. The SVAB is bounded on the north and west by the Coastal Mountain Range and on the east by the southern portion of the Cascade Mountain Range and the northern portion of the Sierra Nevada Mountains.

The SVAB currently is classified as nonattainment for the one-hour state ozone standard as well as for the federal and state eight-hour ozone standards. The SVAB is also designated as nonattainment for the federal 24-hour PM2.5 standards. Additionally, the SVAB is classified as nonattainment for the state 24-hour and annual arithmetic mean PM10 standards. The SVAB is unclassified or classified as attainment for all other pollutant standards.

Existing Ambient Air Quality

CARB, air districts, and other agencies monitor ambient air quality at approximately 250 air quality monitoring stations across the state. The Yolo-Solano Air Quality

Management District (YSAQMD) monitors local ambient air quality within the Solano County. The purpose of the monitoring stations is to measure ambient concentrations of pollutants and determine whether ambient air quality meets California and federal standards. The closest monitor measuring ozone concentrations is the Vacaville-Ulatis Drive monitoring station, located approximately 3 miles southwest of the project site. For PM10, the closest monitor is the Vacaville-Merchant Street monitoring station, located approximately 5 miles southwest of the project site. For PM2.5, the closest monitor is the Woodland-Gibson Road monitoring station, located approximately 18 miles northwest of the project site. Because no monitoring stations within Solano County measure NO_2, CO, or SO_2, data from the nearest representative regional monitoring stations were used. NO_2 data were obtained from the Davis-UCD Campus Monitoring Station, located approximately 15 miles north of the project site. CO data were obtained from the Sacramento-Bercut Drive Monitoring Station, located approximately 33 miles east of the project site, and SO_2 data were obtained from the Sacramento–Del Paso Manor Monitoring Station, located approximately 30 miles east of the project site.

Table 5.1-2 presents the air quality monitoring data from 2020 to 2024, the most recent years for which data are available. Data in this table that are marked in **bold** indicate that the most-stringent current standard was exceeded during that period.

TABLE 5.1-2 AMBIENT AIR QUALITY MONITORING DATA

Pollutant	Averaging Time	2020	2021	2022	2023	2024
O_3 (ppm)	1-hour	0.082	**0.095**	0.086	0.075	0.070
	8-hour	**0.073**	**0.078**	0.068	0.069	0.064
PM10 (µg/m^3)	24-hour	-	**50.0**	33.4	37.6	26.1
	Annual	-	-	12.3	-	11.7
PM2.5 (µg/m^3)	24-hour (98th percentile)	-	20.3	28.7	23.5	24.2
	Annual	-	8.8	8.3	7.4	7.8
NO_2 (ppb)	1-hour (maximum)	25	23	27	22	25
	1-hour (98th percentile)	23.5	20.5	22.7	18.3	17.0
	Annual	0.004	0.003	-	0.003	0.003
CO (ppm)	1-hour	2.3	2.2	2	1.9	1.5
	8-hour	1.6	1.3	1.6	1.3	1.1
SO_2 (ppb)	1-hour (maximum)	2.7	2.2	2.8	2.3	4
	1-hour (99th percentile)	3	2	2	2	2
	24-hour	1.7	1	0.6	1.1	0.8

Sources: U.S. EPA 2026d and CARB 2026a

The maximum concentration values listed in **Table 5.1-2** have not been screened to remove values that may be designated by U.S. EPA as exceptional events. Violations that are the result of exceptional events, such as wildfires, are normally excluded from consideration as AAQS violations. Exceptional events undoubtedly affected many of the maximum concentration values in recent years, especially with wildfires generally occurring between September to November. For a conservative analysis, staff uses the

background ambient air quality concentrations from 2022 to 2024 to represent the baseline condition at the project site.

Health Effects of Criteria Pollutants

Below are descriptions of the health effects of criteria pollutants that are a concern in the regional study area. California Health and Safety Code Section 39606 requires CARB to adopt ambient air quality standards at levels that adequately protect the health of the public, including infants and children, with an adequate margin of safety. Ambient air quality standards define clean air (CARB 2025b).

Ozone. Ozone is a respiratory irritant and an oxidant that increases susceptibility to respiratory infections and that can cause substantial damage to vegetation and other materials. Ozone is not emitted directly into the atmosphere but is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and NOx, including NO_2. Significant ozone production generally requires ozone precursors (ROG and NOx) to be present in a stable atmosphere with strong sunlight.

Ozone can cause the muscles in the airways to constrict, trapping air in the alveoli, potentially leading to wheezing and shortness of breath. Ozone can make it more difficult to breathe deeply and vigorously; cause shortness of breath and pain when taking a deep breath; cause coughing and sore or scratchy throat; inflame and damage the airways; aggravate lung diseases such as asthma, emphysema, and chronic bronchitis; increase the frequency of asthma attacks; make the lungs more susceptible to infection; continue to damage the lungs even when the symptoms have disappeared; and cause chronic obstructive pulmonary disease. Long-term exposure to ozone is linked to aggravation of asthma and may be one of many causes of asthma development. Long-term exposures to higher concentrations of ozone may also be linked to permanent lung damage, such as abnormal lung development in children. The inhalation of ozone causes inflammation and irritation of the tissues lining human airways, causing and worsening a variety of symptoms, and exposure to ozone can reduce the volume of air that the lungs breathe in and cause shortness of breath.

People most at risk for adverse health effects from breathing air containing ozone include people with asthma, children, older adults, and people who are active outdoors, especially outdoor workers. Children are at greatest risk from exposure to ozone because their lungs are still developing and they are more likely to be active outdoors when ozone levels are high, which increases their exposure. Studies show that children are no more or less likely to suffer harmful effects than adults; however, children and teens may be more susceptible to ozone and other pollutants because they spend nearly twice as much time outdoors and engaged in vigorous activities compared to adults. Children breathe more rapidly than adults and inhale more pollution per pound of their body weight than adults and are less likely than adults to notice their own symptoms and avoid harmful exposures.

Particulate Matter. PM10 and PM2.5 represent size fractions of particulate matter that can be inhaled into air passages and the lungs and can cause adverse health effects. Very small particles of certain substances (e.g., sulfates and nitrates) can cause lung damage directly, or can contain absorbed gases (e.g., chlorides or ammonium) that may be injurious to health. The health effects of particulate matter may include cardiovascular effects, such as cardiac arrhythmias and heart attacks, and respiratory effects, such as asthma attacks and bronchitis. Particulates can also reduce visibility.

Nitrogen Dioxide. Breathing air with a high concentration of NO_2 can irritate airways in the human respiratory system. Such exposures over short periods (as represented by the 1-hour standards) can aggravate respiratory diseases, particularly asthma, leading to respiratory symptoms (such as coughing, wheezing or difficulty breathing), hospital admissions and visits to emergency rooms. Longer exposures to elevated concentrations of NO_2 (as represented by the annual standards) may contribute to the development of asthma and potentially increase susceptibility to respiratory infections. People with asthma, as well as children and the elderly are generally at greater risk for the health effects of NO_2. Emissions of NOx, which includes NO_2 and NO, react with other chemicals in the air and sunlight to form both particulate matter and ozone.

Carbon Monoxide. CO is a pollutant that is a product of incomplete combustion and is mostly associated with motor vehicle traffic. High CO concentrations develop primarily during winter when periods of light winds combine with the formation of ground level temperature inversions (typically from the evening through early morning). These conditions result in reduced dispersion of vehicle emissions. Motor vehicles also exhibit increased CO emission rates at low air temperatures. When inhaled at high concentrations, CO combines with hemoglobin in the blood and reduces the oxygen-carrying capacity of the blood. This results in reduced oxygen reaching the brain, heart, and other body tissues. This condition is especially critical for people with cardiovascular diseases, chronic lung disease, or anemia.

Sulfur Dioxide. SO_2 is produced through the combustion of sulfur or sulfur-containing fuels such as coal. SO_2 is also a precursor to the formation of atmospheric sulfate and particulate matter (PM10 and PM2.5) and contributes to potential atmospheric sulfuric acid formation that could precipitate downwind as acid rain.

Lead. Lead has a range of adverse neurotoxin health effects and was predominately released into the atmosphere primarily via the combustion of leaded gasoline. The phase-out of leaded gasoline has resulted in decreasing levels of atmospheric lead.

Sensitive Receptors

Yolo Solano Air Quality Management District (YSAQMD) *Handbook for Assessing and Mitigating Air Quality Impacts* (YSAQMD 2007), defines sensitive receptor as: a location where human populations, especially children, seniors, or sick persons are found, and there is reasonable expectation of continuous human exposure according to the averaging period for the AAQS (e.g., 24-hour, 8-hour, 1-hour). Examples of sensitive

receptors include residences, hospitals, and schools. Locations of sensitive receptors may or may not correspond with the location of a source's maximum off-site concentration. The location of sensitive receptors should be explained in terms that demonstrate the relationship to the project site and the potential air quality impacts (e.g., proximity, topography, or upwind or downwind location).

Section 5.10, Public Health, includes a detailed description of the sensitive receptors near the project.

Regulatory

The federal, state, and local laws, ordinances, regulations, and standards (LORS) applicable to the control of criteria pollutant emissions and mitigation of air quality impacts appear in this section.

Federal

Federal Clean Air Act. The federal Clean Air Act (CAA) (42 U.S.C., § 7401 et seq.) establishes the statutory framework for regulation of air quality in the United States. Under the CAA, the U.S. EPA oversees the implementation of federal programs for permitting new and modified stationary sources, controlling toxic air contaminants, and reducing emissions from motor vehicles and other mobile sources.

Title I (Air Pollution Prevention and Control) of CAA requires establishment of NAAQS, air quality designations, and plan requirements for nonattainment areas. States are required to submit a State Implementation Plan (SIP) to the U.S. EPA for areas in nonattainment with NAAQS. The SIP must demonstrate how state and local regulatory agencies will institute rules, regulations, and other programs to attain NAAQS. Once approved by the U.S. EPA and published in the Federal Register, the local air district rules contained in the SIP become federally enforceable. State law makes CARB the lead agency for all purposes related to the components that are included in the California SIP. For all local air districts in California, the SIP relies on the same core set of control strategies, including emission standards for cars and heavy trucks, fuel regulations and limits on emissions from consumer products (CARB 2026c).

Title 40 Code of Federal Regulations Subchapter C – Air Programs. Title 40 of the Code of Federal Regulations (CFR) Part 51, Requirements for Preparation, Adoption, and Submittal of Implementation Plans, establishes the requirements for Nonattainment New Source Review (NSR). The NSR program requires new and modified stationary sources to obtain air permits and requires Best Available Control Technology (BACT) and emissions offsets.

40 CFR Part 52, Approval and Promulgation of Implementation Plans, including 40 CFR Part 52.21, Prevention of Significant Deterioration (PSD) of air quality, requires major sources or major modifications to major sources to obtain permits for attainment pollutants. The purpose of the federal PSD program is to ensure that attainment areas remain in attainment of NAAQS based upon a proposed facility's annual emissions. The

proposed project would be a new source that does not have a rule listed emission source thus the PSD trigger levels are 250 tons per year for NOx, VOC, SO_2, PM2.5 and CO.

State

Generally, state law designates local air districts as having primary responsibility for the control of air pollution from all sources other than vehicular sources while the control of vehicular air sources is the responsibility of CARB. (Health and Saf. Code, § 39002.) CARB is also responsible for the state's overall air quality management, including, among other things, establishing CAAQS for criteria pollutants, identifying toxic air contaminants of statewide concern, and adopting measures to reduce the emissions of those toxics through airborne toxic control measures (ATCM), and regulating emissions of greenhouse gas emissions.

California Health and Safety Code

Section 40910 to 40930. These sections require air district permitting of stationary sources to be consistent with CARB approved Clean Air Plans or State Implementation Plans (SIPs).

Section 41700. This section states that "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

California Clean Air Act

The California Clean Air Act (CCAA) was enacted by the California legislature in 1988. The CCAA requires that all air districts in the state endeavor to achieve and maintain California Ambient Air Quality Standards (CAAQS) for by the earliest practical date. **Table 5.1-1** above shows the CAAQS currently in effect for each of the criteria pollutants, as well as the other pollutants recognized by the state. As shown in **Table 5.1-1**, the CAAQS are generally more stringent than the corresponding federal standards.

The CCAA specifies that districts focus particular attention on reducing the emissions from transportation and area-wide emission sources (California Health and Saf. Code, § 40910), and the CCAA provides districts with authority to regulate indirect sources. The CARB and local air districts are responsible for achieving CAAQS, which are to be achieved through district-level Air Quality Management Plans (AQMPs) that would be incorporated into the SIP. In California, the U.S. EPA has delegated authority to prepare SIPs to CARB, which in turn, has delegated that authority to individual air districts. Each district plan is required to either 1) achieve a 5% annual reduction, averaged over consecutive 3-year periods, in districtwide emissions of each nonattainment pollutant or

its precursors, or 2) provide for implementation of all feasible measures to reduce emissions. Any planning effort for air quality attainment would thus need to consider both state and federal planning requirements.

California has also adopted a host of other regulations that reduce criteria pollutant emissions, including the following:

- Title 13, Div. 3: Motor Vehicles
- Title 17, Div. 3: Public Health
- Title 20 California Code of Regulations (CCR): Appliance Energy Efficiency Standards
- Title 24, Part 6, CCR: Building Energy Efficiency Standards
- Title 24, Part 11, CCR: Green Building Standards Code

California Code of Regulations

U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program. The California Clean Air Act mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. The earliest (Tier 1) standards for large compression-ignition engines used in off-road mobile sources became effective in California in 1996. Since then, the Tier 3 standards for large compression-ignition engines used in off-road mobile sources went into effect in California for most engine classes in 2006, and Tier 4 or Tier 4 Interim (4i) standards apply to all off-road diesel engines model year 2012 or newer. The tiered engine exhaust standards and standards for fleets that are already in-use provide comprehensive regulation and control to reduce NOx and toxic diesel particulate matter (DPM) emissions from equipment throughout the State.

CARB In-Use Off-Road Diesel Fueled Fleets Regulation. The regulations for in-use off-road diesel equipment are designed to reduce NOx and DPM. Depending on the size of the fleet of equipment, the owner would need to ensure that the average emissions performance of the fleet meets certain state-wide standards (Cal. Code Regs., Tit. 13, § 2449.1). In lieu of improving the emissions performance of the fleet, electric systems can be installed to replace diesel equipment in the fleet average calculations. Presently, all equipment owners are subject to a five-minute idling restriction in the regulation (Cal. Code Regs., Tit. 13, § 2449).

Local

Solano County General Plan. The Solano County General Plan, adopted by the Solano County Board of Supervisors on August 5, 2008, and by the voters of Solano County on November 4, 2008, is a guide for both development and conservation within the unincorporated county through 2030 (Solano County 2008). The following goal, policies, and implementation programs from Chapter 5, Public Health and Safety, are applicable for the project:

- **Goal HS. G-9.** Maintain equitable and healthy air quality in Solano County through actions that avoid and minimize health risks from localized pollution sources and regional wildfire smoke.
- **Policy HS.P-85.** Support land use, transportation management, infrastructure and environmental planning programs that reduce vehicle emissions and improve air quality.
- **Policy HS.P-86.** Minimize health impacts from sources of toxic air contaminants, both stationary (e.g., refineries, manufacturing plants) as well as mobile sources (e.g., freeways, rail yards, commercial trucking operations).
- **Policy HS.P-87.** Promote consistency and cooperation in air quality planning efforts.
- **Implementation Program HS.I-60.** Require the implementation of best management practices to reduce air pollutant emissions associated with the construction of all development and infrastructure projects.
- **Implementation Program HS.I-65.** Assess air quality impacts using the latest version of the California Environmental Quality Act Guidelines and guidelines prepared by the applicable Air Quality Management District.

City of Vacaville General Plan. A portion of the gen-tie line is within the City of Vacaville. The City of Vacaville General Plan serves as the foundational blueprint for both development and conservation within the city. The following goal and policies from the Conservation and Open Space Element are applicable to the project:

- **Goal COS-12.** Maintain and improve air quality.
- **Policy COS-P12.3.** Encourage project designs that protect and improve air quality and minimize direct and indirect air pollutant emissions by including components that reduce vehicle trips and promote energy efficiency.
- **Policy COS-P12.5.** Require that development projects implement best management practices and Best Available Control Technologies to reduce air pollutant emissions associated with the construction and operation of the project.
- **Policy COS-P12.6.** Require dust control measures as a condition of approval for subdivision maps, site plans, and all grading permits.

Yolo-Solano Air Quality Management District Rules and Regulations. The following YSAQMD rules are applicable to the project to limit the generation of air pollutants:

Regulation II. Prohibition, Exceptions – Requirements

- **Rule 2.1.** Control of Emissions. The purpose of this rule is to control the emission of material which may be the cause of air pollution.
- **Rule 2.5.** Nuisance. This rule prohibits the discharge of air contaminants or other materials in quantities that may cause injury, detriment, nuisance, or annoyance to

any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of any such person or the public.

Cumulative

The proposed project would be in the SVAB, which is classified as a national nonattainment area for ozone and PM2.5, and a California nonattainment area for ozone, PM10 and PM2.5. The criteria air pollutants of greatest concern are ozone, PM2.5 and PM10. The nonattainment status is the result of cumulative emissions from all sources of these air pollutants and their precursors within the SVAB. Past, present, and future development projects contribute to the region's adverse air quality conditions on a cumulative basis.

For an air quality cumulative analysis, a radius of six miles is normally used because based on staff's modeling experience, beyond six miles there is no statistically significant concentration overlap for nonreactive pollutant concentrations between two stationary emission sources. According to **Appendix A, Table A-1**, there are 130 existing, approved, pending and proposed projects of potential sources of criteria air pollutants within six miles of the project site.

5.1.2 Environmental Impacts

AIR QUALITY Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations. Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☒	☐	☐
b. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?	☐	☒	☐	☐
c. Expose sensitive receptors to substantial pollutant concentrations?	☐	☒	☐	☐
d. Result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, Air Quality

5.1.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The applicant estimated air pollutant emissions for construction and operational activities using California Emissions Estimator Model (CalEEMod, version 2022.1.1.21). It is conservatively assumed that construction of the project would last approximately 14 months (or 15 months if a groundwater well is constructed). The construction schedule has been developed based on available information provided by the applicant, typical construction practices, and CalEEMod default assumptions. The equipment mix assumptions were based on CalEEMod default assumptions based on proposed land use and is meant to represent a reasonably conservative estimate of construction activity.

Once constructed, the project would operate 7 days per week, 365 days per year. Operation of the proposed project would generate criterial pollutants from area sources, energy sources, and mobile sources. Emissions from these sources were estimated based on CalEEMod default assumptions for operations of the proposed project land uses.

Thresholds of Significance

This air quality evaluation assesses the degree to which the project would potentially cause a significant impact according to the California Environmental Quality Act (CEQA) guidelines. YSAQMD is the local air district responsible for the attainment and maintenance of the federal and state AAQS and associated program requirements at the project location. The analysis is based upon the methodologies and related thresholds of significance in the Handbook for Assessing and Mitigating Air Quality Impacts (YSAQMD 2007) to determine the significance of the potential air quality emissions and impacts. These methodologies include qualitative determinations and the quantification of whether project construction or operation would exceed numeric emissions and health risk thresholds.

YSAQMD Thresholds of Significance for criteria pollutants and the health risks of toxic air contaminants (TACs) that apply during construction and operation are shown in **Table 5.1-3**. The thresholds apply to both construction and operational impacts. If a project exceeds the identified significance thresholds, its emissions would be cumulatively considerable, resulting in significant adverse air quality impacts to the YSAQMD's existing air quality conditions. CEC staff evaluates project emissions against the YSAQMD significance thresholds under CEQA environmental checklist criterion "b."

CEC staff also evaluates the project's potential to expose sensitive receptors to substantial pollutant concentrations under CEQA environmental checklist criterion "c." Staff addresses both the ambient air quality impacts of criteria pollutants, which have health-based standards in this Air Quality section, and **Section 5.10, Public Health**, addresses the impacts of TACs, which are identified as potentially harmful even at low levels and have no established safe levels or health-based ambient air quality standards.

The analysis includes ambient air quality impact modeling for construction and operation. The AAQS, shown in **Table 5.1-1**, are health protective values, so staff uses these health-based regulatory standards to help define what is considered a substantial pollutant concentration for criteria pollutants.[1] Staff's analysis determines whether the project would be likely to exceed any AAQS or contribute substantially to an existing or projected air quality violation, and, if necessary, proposes mitigation to reduce or eliminate these pollutant exceedances or substantial contributions.

TABLE 5.1-3 YSAQMD THRESHOLDS OF SIGNIFICANCE

Pollutant	Thresholds of Significance
ROG	10 tons/year
NOx	10 tons/year
PM10	80 lbs/day
CO	Violation of a state ambient air quality standard for CO
Toxic Air Contaminants (TACs) Threshold	Probability of contracting cancer for the Maximally Exposed Individual (MEI) equals to 10 in one million or more. Ground-level concentrations of non-carcinogenic toxic air contaminants would result in a Hazard Index equal to 1 for the MEI or greater.
Cumulative Impact Threshold	Any proposed project that would individually have a significant air quality impact would also be considered to have a significant cumulative impact. CO impacts are cumulatively significant when modeling shows that the combined emissions from the project and other existing and planned projects (i.e., background concentration) will exceed the CAAQS.
Odors Threshold	A project may reasonably be expected to have a significant adverse odor impact where it "generates odorous emissions in such quantities as to cause detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which may endanger the comfort, repose, health, or safety of any such person or the public, or which may cause, or have a natural tendency to cause, injury or damage to business or property."

Source: YSAQMD 2007, Table 1.

Significance criteria also include Significant Impact Levels (SILs) for the particulate matter portions of the analysis. Regulatory agencies have traditionally applied SILs as a de minimis value, which represents the off-site concentration predicted to result from a source's emissions that does not warrant additional analysis or mitigation. If modeled impacts of a source at any off-site location do not exceed relevant SILs, the source owner would typically not need to assess multi-source or cumulative air quality to determine whether emissions from the source would cause or contribute to a violation of the relevant NAAQS or CAAQS. The SVAB is classified as nonattainment for PM10 and PM2.5 NAAQS/CAAQS. Staff compares the project's contribution to local criteria pollutant concentrations to SILs to determine whether the project's emissions would contribute significantly to those regional exceedances.

1 This approach provides a complete analysis that describes the foreseeable effects of the project in relation to all potential air quality related health impacts, including impacts of criteria pollutants to sensitive receptors; and therefore, addresses the California Supreme Court opinion, *Sierra Club v. County of Fresno* (2018) 6 Cal.5th 502 (https://www.courts.ca.gov/opinions/archive/S219783A.PDF).

YSAQMD does not have significance criteria in terms of PM10 concentrations or 24-hour concentrations of PM2.5. To determine if the project could contribute substantially to the existing PM10 exceedances, this analysis relies on the U.S. EPA PM10 SILs established in federal regulations for non-attainment areas (40 CFR 51.165(b)(2)) for 24-hour impacts (5 µg/m^3) and for annual impacts (1 µg/m^3). The same federal regulation (40 CFR 51.165(b)(2)) also established the U.S. EPA PM2.5 SILs concentrations for 24-hour impacts (1.2 µg/m^3).

With the revised 2024 annual PM2.5 NAAQS of 9.0 µg/m^3, the U.S. EPA issued a recommendation to set the PM2.5 SIL value for annual impacts at 0.13 µg/m^3 (effective May 6, 2024). It should be noted that the U.S. EPA SILs values are all based on the forms of the applicable NAAQS. For example, the 24-hour PM2.5 SILs of 1.2 µg/m^3 is based on the 98th percentile 24-hour concentrations averaged over three years. The annual PM2.5 SILs of 0.13 µg/m^3 is based on a three-year average of annual average concentrations. For this analysis, staff uses the U.S. EPA SILs to determine project impact significance of PM10 and PM2.5 concentrations.

5.1.2.2 Direct and Indirect Impacts

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determinations.

a. Would the project conflict with or obstruct implementation of the applicable air quality plan?

This section considers the project's consistency with the applicable air quality management plan. This is a qualitative determination that considers the combined effects of project construction and operation.

Construction and Operation

Less Than Significant with Mitigation Incorporated. The YSAQMD is the local agency responsible for improving and maintaining air quality and develops regulations that must be consistent with or more stringent than federal and state air quality laws and regulations. As of April 2026, the most current applicable local air quality plan (AQP) is the YSAQMD's most recent Triennial Assessment and Plan Update (YSAQMD 2025). This plan serves as a comprehensive strategy to protect public health by working toward state and federal air quality standards and reducing health disparities from air pollution exposure. Key elements of this plan include regulations to limit ozone precursors (ROG and NOx), particulate matter (PM) emissions, and other control measures to reduce air pollutants.

A project would be consistent with the AQP if that project:

1. Supports the primary goals of the AQP.

The determination for this criterion can be met through consistency with the YSAQMD significance thresholds. As explained in the discussions under environmental checklist criteria "b" and "c" of this air quality analysis, the project, including jurisdictional and non-jurisdictional project components, would have less than significant impacts related to the YSAQMD significance thresholds with the implementation of COCs **AQ-SC1** through **AQ-SC5**, for jurisdictional project components, and recommended **MM AQ-1** and **MM AQ-2**, for non-jurisdictional project components. Since the project emissions comply with the significance thresholds with mitigation, the project would have a less than significant impact related to the primary goals of the AQP.

2. Includes applicable control measures from the AQP.

   The YSAQMD's Triennial Assessment and Plan Update implements "all feasible control measures" to reduce ozone precursors (ROG and NOx) and particulate matter (PM) primarily through strict district rules. With the implementation of COCs **AQ-SC1** through **AQ-SC5**, for jurisdictional project components, and recommended **MM AQ-1** and **MM AQ-2**, for non-jurisdictional components, the project would implement measures consistent with the control measures from the AQP. Furthermore, because the project would comply with all applicable YSAQMD rules and would meet state and federal standards and/or local building codes, the project would not conflict with any applicable control measures from the Triennial Assessment and Plan Update.

3. Does not disrupt or hinder implementation of any AQP control measures.

   A project conflicts with the YSAQMD Triennial Assessment and Plan Update if it drives long-term Vehicle Miles Traveled (VMT) increases or interferes with district emission programs. Because no permanent O&M staff would be located at the project site and the BESS would be uncrewed, the expected maintenance would generate very limited traffic during operations, avoiding conflicts with mobile source reduction goals. While the project would require up to six workers using light duty trucks for routine visual inspections, additional workers and heavy equipment would be brought to the facility infrequently, limited to one major maintenance inspection annually and battery augmentation approximately every 2 to 3 years. Furthermore, its rural agricultural location does not impede YSAQMD's agricultural or stationary emission strategies. Therefore, the project supports the clean energy transition without hindering any established AQP control measures.

b. Would the project result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard?

This section quantifies the project's criteria pollutant emissions rates and focuses on whether project-related emissions of nonattainment criteria pollutants would exceed any of the applicable local air district significance thresholds.

Construction

Less Than Significant with Mitigation Incorporated. Construction of the proposed project would result in temporary emissions including: (1) fugitive dust emissions resulting from soil disturbance activity; (2) emissions of air pollutants from fuel combustion in construction equipment; and (3) emissions of air pollutants from fuel combustion in vehicles used for worker commute, equipment deliveries, and material hauling.

Criteria air pollutant emissions associated with construction activities were quantified using CalEEMod. Default values provided by the program were used where detailed proposed project information was not available.

The project will include control of dust emissions generated during grading activities. Measures for dust control applied in CalEEMod for this analysis include the following:

- Watering of exposed surfaces up to two times per day
- Implementation of vehicle speed on unpaved roads (assumes a CalEEMod default speed of 25 miles per hour), and
- Use of dust suppressants on all unpaved roads within the project construction footprint.

Table 5.1-4 presents the maximum daily and annual emissions during the construction of the project, with and without requiring Tier 4 construction equipment and dust control measures. The estimated emissions include both jurisdictional and non-jurisdictional project components.

TABLE 5.1-4 ESTIMATED MAXIMUM DAILY AND ANNUAL CONSTRUCTION CRITERIA POLLUTANT EMISSIONS

Sources	ROG	NOx	CO	SOx	PM10	PM2.5
	DAILY (LBS/DAY)					
Unmitigated	16.58	154.36	175.27	0.40	102.00	13.59
Mitigated with Dust Control and Tier 4 Standards	4.74	47.75	170.65	0.24	11.27	2.84
YSAQMD Thresholds of Significance	-	-	-	-	80	-
Threshold Exceeded with Mitigation?	N/A	N/A	N/A	N/A	No	N/A
	ANNUAL (TONS/YEAR)					
Unmitigated	1.26	12.37	13.49	0.03	6.21	0.98
Mitigated with Dust Control and Tier 4 Standards	0.33	3.71	12.34	0.02	0.82	0.23
YSAQMD Thresholds of Significance	10	10	-	-	-	-
Threshold Exceeded with Mitigation?	No	No	N/A	N/A	N/A	N/A

Source: TT 2025g and staff analysis.

The maximum daily emissions shown in **Table 5.1-4** indicate that construction emissions would be lower than the applicable thresholds of significance for all criteria pollutants with mitigation. The applicant proposed measures, including Tier 4 construction equipment and dust control measures are sufficient to address impacts from construction emissions. Staff has incorporated the applicant proposed measures in staff recommended COCs **AQ-SC1** through **AQ-SC5** for jurisdictional project components, which would require implementation of fugitive dust and combustion emissions control measures to ensure that PM10 and PM2.5 emissions are reduced to a level that would not result in a considerable increase of these pollutants. This impact would be reduced to less than significant with the implementation of COCs **AQ-SC1** through **AQ-SC5**. For the non-jurisdictional project components, staff recommends **MM AQ-1** and **MM AQ-2**, which includes PG&E Construction Measures for air quality, to further reduce fugitive dust and combustion emissions during construction of these components.

Operation

Less Than Significant Impact. Operation of the proposed project would generate ROG, NOx, CO, SOx, PM10, and PM2.5 emissions from mobile sources (vehicle trips), area sources, energy sources and off-road sources. Emissions from these sources were estimated based on CalEEMod default assumptions for operations of the proposed project land uses. The emissions accounted for both jurisdictional and non-jurisdictional project components.

Table 5.1-5 presents the maximum daily and annual emissions associated with the operation of the project after all phases of construction have been completed, including both jurisdictional and non-jurisdictional project components.

TABLE 5.1-5 ESTIMATED MAXIMUM DAILY AND ANNUAL OPERATIONAL CRITERIAL POLLUTANT EMISSIONS

Sources	ROG	NOx	CO	SOx	PM10	PM2.5
	DAILY (LBS/DAY)					
Area, Mobile and Offroad	2.88	0.09	4.24	<0.001	0.02	0.01
YSAQMD Thresholds of Significance	-	-	-	-	80	-
Threshold Exceeded?	N/A	N/A	N/A	N/A	No	N/A
	ANNUAL (TONS/YEAR)					
Area, Mobile and Offroad	0.44	0.01	0.37	<0.01	0.002	<0.001
YSAQMD Thresholds of Significance	10	10	-	-	-	-
Threshold Exceeded?	No	No	N/A	N/A	N/A	N/A

Source: TT 2025g and staff analysis.

As shown in **Table 5.1-5**, daily and annual operational emissions for the project would not exceed YSAQMD's significance thresholds for any criteria air pollutant. Therefore, the project would result in a less-than-significant impact related to emissions of criteria air pollutant emissions during operation.

c. Would the project expose sensitive receptors to substantial pollutant concentrations?

This section describes the effect of proposed project emissions on the ambient air pollutant concentrations and identifies sensitive receptors potentially impacted by project construction and operations.

Staff considers any new AAQS exceedance or a substantial contribution to any existing AAQS exceedance caused by the project's emissions to be substantial evidence of potentially significant impacts that would require the evaluation of potential mitigation measures.

This section discusses criteria pollutant impacts from construction and operation. **Section 5.10, Public Health**, discusses the results of toxic air contaminants for both construction and operation.

Construction

Less Than Significant with Mitigation Incorporated. Construction emissions of criteria pollutants, including NO_2, CO, SO_2, PM10, and PM2.5, have been evaluated under criterion "b" of the CEQA environmental checklist above. With the staff recommendation to implement COCs **AQ-SC1** through **AQ-SC5** for jurisdictional project components and **MM AQ-1** and **MM AQ-2** for non-jurisdictional components to control fugitive dust and combustion emissions, construction emissions would not exceed the YSAQMD's significance thresholds. Although mitigated project construction emissions would fall below the emissions thresholds, this section of the staff analysis explores the ambient air quality impacts of criteria pollutant emissions during construction to evaluate whether the project would expose sensitive receptors to substantial pollutant concentrations.

Jurisdictional Project Components

The applicant provided an air dispersion modeling analysis for NO_2, CO, SO_2, PM10, and PM2.5 impacts during construction. The applicant conducted the air dispersion modeling using the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD [Version 24142]). Five years of meteorological data (2017–2021) comprising Vacaville, California, surface observations with concurrent upper air data from Oakland, California, were obtained from CARB and input to AERMOD. Air dispersion modeling of emissions from construction equipment was conducted using emissions estimated using CalEEMod.

Table 5.1-6 shows the maximum ambient air quality impacts during project construction. The project impact column shows the worst-case impacts of the project from modeling. The background column shows the highest concentrations from the prior three years (2022-2024), from **Table 5.1-2**. The total impact column shows the sum of the existing background condition plus the maximum modeled impact predicted

by the modeling analysis. The limiting standard column shows the applicable limiting AAQS.

TABLE 5.1-6 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING CONSTRUCTION (µg/m³)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	7.31[a]	37.6	44.91	50	90
	Annual	0.27	12.3	12.57	20	63
PM2.5	24-hour	1.12	28.7	29.82	35	85
	Annual	0.07	8.3	8.37	9	93
CO	1-hour	1,830.23	2,293	4,123.23	23,000	18
	8-hour	419.00	1,835	2,254	10,000	23
NO_2 [b]	State 1-hour	139.81	50.8	190.61	339	56
	Federal 1-hour	139.81	42.7	182.51	188	97
	Annual	2.17	5.65	7.82	57	14
SO_2 [b]	State 1-hour	1.79	10.48	12.27	655	2
	Federal 1-hour	1.79	5.24	7.03	196	4
	24-hour	0.18	2.88	3.06	105	3

Notes:
a For comparison with the CAAQS, staff conservatively combines the first highest modeled 24-hour project impact with the worst-case background. However, as discussed in the text, the sixth-highest concentration is compared with the U.S. EPA SIL based on the form of the NAAQS.
b The state 1-hour NO_2 and SO_2 total impacts include the maximum modeled project impact combined with maximum NO_2 and SO_2 background value. The federal 1-hour NO_2 and SO_2 total impacts include the maximum modeled project impact combined with 98th and 99th percentiles of daily maximum 1-hour background NO_2 and SO_2 concentrations.
Source: TT 2025g with staff analysis.

Table 5.1-6 shows that the impacts from project construction would be below the limiting standards for CO, NO_2, and SO_2. Even though the PM10 and PM2.5 background for the last three years of available data were lower than the applicable AAQS, the SVAB is still classified as nonattainment for PM10 and PM2.5. The project would therefore contribute to existing regional exceedances of the PM standards. As discussed above, staff uses the U.S. EPA SILs to determine project impact significance of PM10 and PM2.5 concentrations. When comparing the project's localized impacts to the U.S. EPA SILs, staff uses modeled project impacts that align with the form of the NAAQS. Based on the form of the 24-hour PM10 NAAQS, which is defined as “not to be exceed more than once per year on average over three years,” the sixth highest modeled concentration is the appropriate value for comparison with the 24-hour PM10 SIL. The sixth highest modeled 24-hour PM10 concentration of 5.77 µg/m³, which is modeled at the project fenceline, exceeds the applicable U.S. EPA SIL of 5 µg/m³. However, modeled project impacts decrease rapidly with distance from the project. The sixth highest 24-hour PM10 concentration at the nearest receptor would drop to 4.09 µg/m³, which is below the U.S. EPA SIL of 5 µg/m³. In addition, as shown in **Table 5.1-6**, the worst-case modeled annual PM10, 24-hour PM2.5, and annual PM2.5 concentrations are below their respective SILs. Furthermore, construction is considered short-term and the impacts during construction would be reduced with the implementation of staff

proposed COCs **AQ-SC3** through **AQ-SC5**. With mitigation, the PM10 and PM2.5 impacts of the project during construction would be less than significant.

Non-Jurisdictional Project Components

Construction of non-jurisdictional project components, including the interconnection facilities and the new Corby Bay, would generate short-term emissions from construction equipment, material transport and associated activities. Construction activities for these components would be temporary in nature and are unlikely to result in long-term adverse effects on air quality. Short-term construction emissions and any associated air quality impacts, such as dust or other airborne pollutants, would dissipate as a function of distance from the construction site and comply with applicable regulations. The modeled impacts shown in **Table 5.1-6** also included construction emissions from non-jurisdictional project components. Furthermore, construction impacts would be reduced with the implementation of staff recommended **MM AQ-1** and **MM AQ-2**. Moreover, these activities would not introduce any new sources of significant air quality impacts beyond those identified and mitigated elsewhere in this analysis.

With the implementation of COCs and MMs, project construction would not expose sensitive receptors to substantial criteria pollutant concentrations, and this impact would be less than significant.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with implementation of COCs, operation of the project would not expose sensitive receptors to substantial pollutant concentrations and impacts would be less than significant.

The AQIA for project operation includes emissions from mobile sources (vehicle trips), area sources, energy sources and off-road sources. The applicant's AQIA compares worst-case ground-level impacts resulting from the project operation with established state and federal AAQS. CEC staff reviewed the applicant's dispersion modeling files, and staff agrees with the inputs used by the applicant and the outputs from the model for the AQIA.

TABLE 5.1-7 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING OPERATION (µg/m³)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
PM10	24-hour	0.01	37.6	37.61	50	75
	Annual	0.0007	12.3	12.30	20	62
PM2.5	24-hour	0.003	28.7	28.70	35	82
	Annual	0.0005	8.3	8.30	9	92
CO	1-hour	32.96	2,293	2,325.96	23,000	10
	8-hour	6.18	1,835	1,841.18	10,000	18
NO_2 [a]	State 1-hour	0.23	50.8	51.03	339	15
	Federal 1-hour	0.23	42.7	42.93	188	23
	Annual	0.003	5.65	5.65	57	10
SO_2 [a]	State 1-hour	0.002	10.48	10.48	655	2

TABLE 5.1-7 MAXIMUM AMBIENT AIR QUALITY IMPACTS DURING OPERATION (µg/m³)

Pollutant	Averaging Time	Project Impact	Background	Total Impact	Limiting Standard	Percent of Standard
	Federal 1-hour	0.002	5.24	5.24	196	3
	24-hour	0.0002	2.88	2.88	105	3

Notes:
a The state 1-hour NO_2 and SO_2 total impacts include the maximum modeled project impact combined with maximum NO_2 and SO_2 background value. The federal 1-hour NO_2 and SO_2 total impacts include the maximum modeled project impact combined with 98th and 99th percentiles of daily maximum 1-hour background NO_2 and SO_2 concentrations.
Source: TT 2025g with staff analysis.

As shown in **Table 5.1-7**, the proposed project, including jurisdictional and non-jurisdictional project components, would not exceed the CAAQS or NAAQS after accounting for background concentrations for CO, NO_2, and SO_2. Even though the PM10 and annual PM2.5 background for the last three years of available data were lower than the applicable AAQS, the SVAB is still classified as nonattainment for PM10 and PM2.5. The project would therefore contribute to existing regional exceedances of the PM standards. However, the maximum modeled PM10 and PM2.5 impacts during project operation would not exceed the applicable U.S. EPA SILs. Therefore, project routine operation would not expose sensitive receptors to substantial pollutant concentrations.

BESS Thermal Runaway and Fire Impacts

Section 4.4, Worker Safety and Fire Protection, provides a detailed discussion regarding potential BESS safety hazards and concludes that the risk of BESS thermal runaway is small and is heavily influenced by older (pre-2023) technology. The overall utility-scale BESS failure rate has sharply decreased while the global installed capacity has dramatically increased. The most recent data from EPRI shows that the failure rate dropped by 99 percent from 2018 to 2025 as lessons learned from early failures have been incorporated into the latest designs and best practices. See more detailed discussion in **Section 4.4, Worker Safety and Fire Protection**. **Appendix D, Dispersion and Frequency Analysis**, also provides a detailed analysis of the frequency of events for newer, LFP-type systems.

Appendix D, Dispersion and Frequency Analysis, provides a detailed analysis regarding potential air quality and public health impacts during a BESS thermal runaway and fire event for the project. Based on conservative assumptions, **Appendix D, Dispersion and Frequency Analysis**, shows that a BESS incident could cause an exceedance of the AEGL-1 for 1-hour NO_2 at the closest few receptors within 2,029 ft (0.38 miles) of the incident BESS unit during worst-case meteorological conditions. As shown in Attachment 1 of **Appendix D, Dispersion and Frequency Analysis**, the worst-case modeled NO_2 concentration at the nearest North receptor is 2,587.5 µg/m³, which is above the NO_2 AEGL-1 of 941 µg/m³, but remains well below the NO_2 AEGL-2 of 22,582 µg/m³. When considering impacts from multiple TACs, **Appendix D, Dispersion and Frequency Analysis**, shows a maximum total Hazard Index of 3.44 when comparing against AEGL-1 levels at the nearest sensitive receptor, indicating that the worst-case combined impacts from TACs would be 3.44 times of AEGL-1. However,

when compared against AEGL-2 levels, the maximum total Hazard Index at the nearest sensitive receptor would only be 0.18, indicating the worst-case combined impacts would be well below AEGL-2. As discussed above, with concentrations above AEGL-1, most people might experience notable discomfort or irritation, but the effects are temporary and not disabling. And the modeling results show concentrations well below AEGL-2; therefore, CEC staff does not expect any serious, long-lasting health effects or irreversible health effects to occur or an impaired ability to escape the situation. In addition, **Appendix D, Dispersion and Frequency Analysis**, also shows that across the full set of 43,824 modeled hours, each of which it is assumed emissions are occurring, the NO_2 AEGL-1 threshold was exceeded at the nearest receptor for only 301 hours, representing approximately 0.7 percent of the total modeled period. For all other hours, an incident would not cause health thresholds at the closest receptor to be exceeded. The modeled NO_2 AEGL-1 exceedance hours for other nearby receptors are substantially fewer than 301 hours over the 43,824-hour modeled period, indicating a modeled exceedance frequency significantly lower than 0.7 percent. Moreover, for the purpose of evaluating potential impacts, the analysis conservatively assumed the BESS unit closest to the nearest resident would be the affected unit. However, a thermal runaway event would not necessarily occur at the closest unit, the affected unit could be located further away from the nearby residents. Under such circumstances, potential air quality impacts would be expected to be even lower than the modeled results due to the increased distance from the release location to the public.

In addition, **Appendix D, Dispersion and Frequency Analysis**, indicates that for newer, LFP-type systems, a BESS event is estimated to occur only once every 11 to 67 years. For the detailed calculation methodology of the estimated frequency, please see **Appendix D, Dispersion and Frequency Analysis**.

Even if such an event occurs, the probability that nearby residents would experience notable but temporary symptoms is only 0.7 percent under worst-case meteorological conditions. Based on these factors, CEC staff finds that the probability of a BESS incident exposing sensitive receptors to substantial pollutant concentrations would be very unlikely.

However, in order to ensure public health is protected, CEC staff recommends COCs **PH-1** and **PH-2** in **Section 5.10, Public Health**, to require the applicant to prepare an Emergency Response Plan, implement an emergency notification system, and real-time air monitoring during BESS thermal runaway non-fire, fire, or explosion scenarios. In addition, staff recommended COCs in **Section 4.4, Worker Safety and Fire Protection**, and **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, would further reduce any impacts to public health. COC **WORKER SAFETY-6** would ensure that the proposed BESS would comply with the latest versions of National Fire Protection Association (NFPA) 855 for BESS safety. COC **WORKER SAFETY-7** would require administrative and engineering controls to prevent or respond to a fire from the BESS. COC **WORKER SAFETY-10** would require providing the fire departments with a drone capable of detecting toxic air contaminants including NO_2,

CO, and HF, thus allowing for immediate detection of TAC levels within the plume when the first responders arrive at the scene. COC **WORKER SAFETY-8** would ensure additional fire protection and worker EMS response. COC **HAZ-9** would also require soil and water measurements. The adoption of these COCs would further reduce the risk and impacts of any BESS thermal runway/fire events. See more detailed discussion in **Appendix D, Dispersion and Frequency Analysis**.

Therefore, with the implementation of proposed COCs, project operation would not expose sensitive receptors to substantial pollutant concentrations, and this impact would be less than significant with mitigation.

d. Would the project result in other emissions (such as those leading to odors) adversely affecting a substantial number of people?

This section considers impacts that may arise from emissions other than criteria air pollutants, such as emissions that may lead to odors. Toxic air contaminants are addressed separately in **Section 5.10, Public Health**.

Construction

Less Than Significant with Mitigation Incorporated. Construction activities, including both jurisdictional and non-jurisdictional project components, could temporarily result in emissions that lead to odors. For example, diesel exhaust and VOCs would be emitted from diesel engines used for project construction. However, there will be a limited number of diesel engines used during project construction and the construction duration will not exceed 14 months (or 15 months if a groundwater well is constructed). Odors from construction activities within the site would be temporary in nature and dissipate as a function of distance. Accordingly, project construction is not expected to involve sources of emissions that may lead to odor impacts or impacts of emissions other than those pollutants identified elsewhere in this analysis.

Fugitive dust emissions can also create a nuisance that can cause adverse effects. To ensure that fugitive dust emissions would not occur at levels that could adversely affect a substantial number of people, the project would implement fugitive dust control measures as specified in COC **AQ-SC3** and **AQ-SC4** for jurisdictional project components, and staff recommended **MM AQ-1** for non-jurisdictional components. Therefore, the project would not have substantial fugitive dust emissions during construction that could adversely affect a substantial number of people.

Therefore, the construction of the project would not result in other emissions, such as those leading to odors, that could adversely affect a substantial number of people and construction activities would have a less than significant impact.

Operation

Less Than Significant with Mitigation Incorporated. Potential odor sources from routine project operation, including both jurisdictional and non-jurisdictional project

components, would include diesel exhaust from vehicle trips. Once built and operating, the project would have no notable emissions other than those from mobile sources identified elsewhere in this analysis during routine operation. Nuisance impacts would not be likely to occur during project routine operation. Therefore, during routine operation, the project would not result in odors or other emissions that could adversely affect a substantial number of people and would have a less than significant impact.

As discussed above, during a potential BESS thermal runaway or fire event, the worst-case NO_2 concentration at the nearest residences could exceed AEGL-1, which may lead to odor impacts. However, the modeled exceedance of NO_2 AEGL-1 only represents approximately 0.7 percent of the total modeled period under worst-case meteorological conditions. In addition, as discussed above, the BESS event is estimated to occur only once every 11 to 67 years. Based on these factors, CEC staff finds that the probability of a BESS incident resulting in odors or other emissions that could adversely affect a substantial number of people would be very unlikely. However, the adoption of the COCs in **Section 5.10, Public Health, Section 4.4, Worker Safety and Fire Protection**, and **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, would further reduce any odor impacts.

5.1.2.3 Cumulative Impacts

Based on the analysis below, the project would not result in a cumulatively considerable net increase of any criteria air pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Construction and Operation

Less Than Significant with Mitigation Incorporated. The conclusion for cumulative impacts to criteria air pollutant concentrations relies on the quantified emissions and the modeled concentrations presented above. Each of the projects in the cumulative project scenario could result in some level of contribution to the region's adverse air quality conditions, although the individual contribution of each project would be minimized if each project is consistent with air quality management planning efforts and in compliance with applicable local air district rules and regulations, as described with the regulatory setting.

Under environmental checklist criterion "b," staff concludes that the project's criteria pollutant emissions, including both jurisdictional and non-jurisdictional project components, would not occur at rates that could be cumulatively significant. The project's emissions of criteria pollutants and precursors during construction and operation would not exceed any threshold of significance for emissions. With the implementation of COCs **AQ-SC1** through **AQ-SC5** for jurisdictional project components and recommended **MM AQ-1** and **MM AQ-2** for non-jurisdictional components, the project construction would not result in a cumulatively significant impact.

Under environmental checklist criterion "c," staff presents the results of air quality impact analysis for all criteria pollutants during construction and operation. The total air quality impacts include background concentrations as a means of capturing the effects of existing sources in the cumulative conditions.

The current nonattainment of PM10 and PM2.5 standards in the area is due to the combined effects of existing, background stationary and mobile sources. As discussed above, the project's PM10 and PM2.5 impacts during construction and routine operation would not be cumulatively significant since the modeling discussed above shows that the combined emissions from the project and background concentrations would not exceed the AAQS and the project impacts would be below applicable U.S. EPA SILs at sensitive receptors. The project's incremental contribution to the cumulative impact would not be cumulatively considerable during construction or routine operation. In addition, the proposed project does not include any stationary emission sources.

As discussed above, during a potential BESS thermal runaway or fire event, the worst-case NO_2 concentration at the nearest residences could exceed AEGL-1. However, the modeled exceedance of NO_2 AEGL-1 only represents approximately 0.7 percent of the total modeled period under worst-case meteorological conditions. In addition, as discussed above, the BESS event is estimated to occur only once every 11 to 67 years. Based on these factors, CEC staff finds that the probability of a BESS incident contributing to the cumulative impact of criteria pollutant concentrations would be very unlikely. However, the adoption of the COCs in **Section 5.10, Public Health**, **Section 4.4, Worker Safety and Fire Protection**, and **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, would further reduce any cumulative impacts. As a result, with implementation of the COCs, the project is not expected to lead to significant overlapping criteria pollutant concentrations with the nearby projects.

5.1.3 Project Conformance with Applicable LORS

Table 5.1-9 includes CEC staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the jurisdictional project components would conform with LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the proposed project would conform with all applicable LORS. The subsection below, "5.1.5 Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.1-9 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Clean Air Act	
Federal CAA, 42 United States Code Sections 7401-7675	**Yes.** Regulates air emissions from area, stationary, and mobile sources and requires the adoption of the NAAQS to protect public health and welfare from the effects of air pollution. With the implementation of COCs **AQ-SC1** through **AQ-SC5, MM AQ-1** and **MM AQ-2**, the

TABLE 5.1-9 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	project construction and operation would not result in a significant air quality impact.
Title 40 Code of Federal Regulations Subchapter C –Air Programs	
40 CFR Part 51	**Not applicable.** The proposed project does not qualify as a stationary source and therefore is not subject to NSR.
40 CFR Part 52	**Not applicable.** Because the proposed project emissions would be less than prescribed amounts, the project would not be subject to PSD.
State	
California Health and Safety Code	
Section 41700, Nuisance Provisions	**Yes.** Applies to all of the proposed project's emitting activities and sources. To avoid the potential for injury, detriment, nuisance, or annoyance this analysis includes COCs **AQ-SC1** to **AQ-SC4** for minimizing visible dust during construction.
U.S. EPA/CARB Off-Road Mobile Sources Emission Reduction Program	**Yes.** Mandates that CARB achieve the maximum degree of emission reductions from all off-road mobile sources to attain the state ambient air quality standards. Off-road mobile sources include construction equipment. COC **AQ-SC5** would ensure construction equipment meets the latest tier.
CARB In-Use Off-Road Diesel Fueled Fleets Regulation	**Yes.** The regulations for in-use off-road diesel equipment are designed to reduce NOx and DPM. COC **AQ-SC5** would ensure construction equipment meets state-wide standards.
Local	
Solano County General Plan	
Goal HS. G-9	**Yes.** The project incorporates design features and mitigation measures to minimize criteria pollutant emissions during construction and operation, ensuring localized health risks and contributions to regional air quality impacts remain less than significant.
Policy HS.P-85	**Yes.** The project minimizes operational vehicle trips as an unmanned battery energy storage facility and implements construction traffic management strategies, supporting overall reductions in vehicle emissions.
Policy HS.P-86	**Yes.** Construction equipment will comply with applicable off-road emission standards, and operational activities will not introduce new significant stationary sources of toxic air contaminants to the area.
Policy HS.P-87	**Yes.** The project's emissions have been evaluated in accordance with the YSAQMD guidelines and CEQA, ensuring consistency with

TABLE 5.1-9 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	regional air quality planning and attainment efforts.
Implementation Program HS.I-60	**Yes.** This analysis includes COCs **AQ-SC1** to **AQ-SC5, MM AQ-1** and **MM AQ-2** to reduce air quality impacts to less than significant.
Implementation Program HS.I-65	**Yes.** This analysis has evaluated the air quality impacts using the lasted CEQA guidelines and YSAQMD guidelines.
City of Vacaville General Plan	
Goal COS-12	**Yes.** The project incorporates design features, COCs **AQ-SC1** to **AQ-SC5, MM AQ-1** and **MM AQ-2** to minimize criteria pollutant emissions during construction and operation of the gen-tie line, ensuring localized health risks and contributions to regional air quality impacts remain less than significant.
Policy COS-P12.3	**Yes.** The project minimizes operational vehicle trips as an unmanned battery energy storage facility and implements construction traffic management strategies, supporting overall reductions in vehicle emissions along the gen-tie route.
Policy COS-P12.5	**Yes.** This analysis includes COCs **AQ-SC1** through **AQ-SC5, MM AQ-1**, and **MM AQ-2** to require the implementation of best management practices and equipment emission standards, reducing air quality impacts associated with construction to less than significant.
Policy COS-P12.6	**Yes.** The project ensures comprehensive dust control through the implementation of COCs **AQ-SC1** through **AQ-SC4** and **MM AQ-1**, which mandate active fugitive dust mitigation and site-specific dust control plans during all grading and construction activities for the gen-tie line.
Yolo Solano Quality Management District	
Regulation II, Rule 2.1 – Control of Emissions.	**Yes.** COC **AQ-SC1** through **AQ-SC5, MM AQ-1** and **MM AQ-2** would ensure compliance with this rule.
Regulation II, Rule 2.5 – Nuisance.	**Yes.** COC **AQ-SC1** through **AQ-SC5, MM AQ-1** and **MM AQ-2** would ensure compliance with this rule.

5.1.4 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to air quality and would conform with applicable LORS. CEC staff recommends adopting the COCs as detailed in subsection "5.1.5 Proposed Conditions of Certification" below. The COCs below are enforceable as part of the CEC's certificate for the project. CEC staff also recommends adopting COC **PH-1** and COC **PH-2** in **Section 5.10, Public Health**; COC **WORKER SAFETY-6**, COC **WORKER**

SAFETY-7, COC **WORKER SAFETY-8**, COC **WORKER SAFETY-10** in **Section 4.4**, **Worker Safety and Fire Protection**; and COC **HAZ-9** in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**.

Impacts associated with the non-jurisdictional project components to be considered for permitting by CPUC would be further reduced with the inclusion of MMs as detailed in subsection "5.1.6 Recommended Mitigation Measures" below.

5.1.5 Proposed Conditions of Certification

AQ-SC1 Air Quality Construction Mitigation Manager (AQCMM). The project owner shall designate and retain an on-site AQCMM who shall be responsible for directing and documenting compliance with Conditions of Certification **AQ-SC3, AQ-SC4,** and **AQ-SC5** for the entire project site and linear facility construction. The on-site AQCMM may delegate responsibilities to one or more AQCMM Delegates. The AQCMM and AQCMM Delegates shall have full access to all areas of construction on the project site and linear facilities and shall have the authority to stop any or all construction activities as warranted by applicable construction mitigation conditions. The AQCMM and AQCMM Delegates may have other responsibilities in addition to those described in this condition. The AQCMM shall not be terminated without written consent of the Compliance Project Manager (CPM).

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit to the CPM for approval, the name, resume, qualifications, and contact information for the on-site AQCMM and all AQCMM Delegates.

AQ-SC2 Air Quality Construction Mitigation Plan (AQCMP). The project owner shall provide an AQCMP to the CPM for approval. The project owner shall comply with the AQCMP. The AQCMP shall detail the steps that will be taken and the reporting requirements necessary to ensure compliance with Conditions of Certification **AQ-SC3, AQ-SC4**, and **AQ-SC5**.

Verification: At least 30 days prior to the start of any ground disturbance, the project owner shall submit the AQCMP to the CPM for approval. The AQCMP shall include effectiveness and environmental data for the proposed soil stabilizer. The CPM will notify the project owner of any necessary modifications to the plan within 15 days from the date of receipt.

AQ-SC3 Construction Fugitive Dust Control. The AQCMM shall submit documentation to the CPM in each Monthly Compliance Report (MCR) that demonstrates compliance with the AQCMP mitigation measures for the purposes of minimizing fugitive dust emission creation from construction activities and preventing all fugitive dust plumes that would not comply with the performance standards identified in **AQ-SC4** from leaving the project site. Any deviation from the AQCMP mitigation measures shall require prior CPM notification and approval and

shall require demonstration that such deviation will not result in a new or increased significant environmental impact.

Report monthly on the following fugitive dust mitigation measures that shall be included in the AQCMP required by **AQ-SC2**:

a. The main access roads through the facility will be either paved or stabilized using soil binders, or equivalent methods, to provide a stabilized surface that is similar for the purposes of dust control to paving, that may or may not include a crushed rock (gravel or similar material with fines removed) top layer, prior to initiating construction, and delivery areas for operations materials (chemicals, replacement parts, etc.) will be paved or treated prior to taking initial deliveries.

b. All unpaved construction roads and unpaved operation and maintenance site roads, as they are being constructed, shall be stabilized with a non-toxic soil stabilizer or soil weighting agent that can be determined to be as efficient as or more efficient for fugitive dust control than CARB approved soil stabilizers, and that shall not increase any other environmental impacts, including loss of vegetation to areas beyond where the soil stabilizers are being applied for dust control. All other disturbed areas in the project and linear construction sites shall be watered as frequently as necessary during grading; and after active construction activities shall be stabilized with a non-toxic soil stabilizer or soil weighting agent, or alternative approved soil stabilizing methods, to comply with the dust mitigation objectives of COC **AQ-SC4**. The frequency of watering can be reduced or eliminated during periods of precipitation.

c. No vehicle shall exceed 15 miles per hour on unpaved areas within the construction site, with the exception that vehicles may travel up to 25 miles per hour on stabilized unpaved roads as long as such speeds do not create visible dust emissions.

d. Visible speed limit signs shall be posted at the construction site entrances.

e. All construction equipment vehicle tires shall be inspected and washed as necessary to be cleaned free of dirt prior to entering paved roadways.

f. Gravel ramps of at least 20 feet in length must be provided at the tire washing/cleaning station.

g. All unpaved exits from the construction site shall be graveled or treated to prevent track-out to public roadways.

h. All construction vehicles shall enter the construction site through the treated entrance roadways, unless an alternative route has been submitted to and approved by the CPM.

i. Construction areas adjacent to any paved roadway below the grade of the surrounding construction area or otherwise directly impacted by sediment from site drainage shall be provided with sandbags or other equivalently

effective measures to prevent run-off to roadways, or other similar run-off control measures as specified in the Storm Water Pollution Prevention Plan (SWPPP), only when such SWPPP measures are necessary so that this condition does not conflict with the requirements of the SWPPP.

j. All paved roads within the construction site shall be swept daily or as needed (less during periods of precipitation) on days when construction activity occurs to prevent the accumulation of dirt and debris.

k. At least the first 500 feet of any paved public roadway exiting the construction site or exiting other unpaved roads en route from the construction site or construction staging areas shall be swept as needed (less during periods of precipitation) on days when construction activity occurs or on any other day when dirt or runoff resulting from the construction site activities is visible on the public paved roadways.

l. All soil storage piles and disturbed areas that remain inactive for longer than 10 days shall be covered or shall be treated with appropriate dust suppressant compounds.

m. All vehicles that are used to transport solid bulk material on public roadways and that have potential to cause visible emissions shall be provided with a cover, or the materials shall be sufficiently wetted and loaded onto the trucks in a manner to provide at least two feet of freeboard.

n. Wind erosion control techniques (such as windbreaks, water, chemical dust suppressants, and/or vegetation) shall be used on all construction areas that may be disturbed. Any windbreaks installed to comply with this condition shall remain in place until the soil is stabilized or permanently covered with vegetation.

Verification: The AQCMM shall provide the CPM a MCR to include the following to demonstrate control of fugitive dust emissions:

A. A summary of all actions taken to maintain compliance with this condition;

B. Copies of any complaints filed with the District in relation to project construction; and

C. Any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC4 Dust Plume Response Requirement. The AQCMM or an AQCMM Delegate shall monitor all construction activities for visible dust plumes. Observations of visible dust plumes that have the potential to be transported (A) off the project site and within 400 feet upwind of any regularly occupied structures not owned by the project owner, or (B) 200 feet beyond the centerline of the construction of linear facilities, indicate that existing mitigation measures are not effective. The AQCMP shall include a section detailing the additional mitigation measures described

below and how they will be implemented to meet these fugitive dust control performance standards.

The AQCMM or Delegate shall implement the following procedures for additional mitigation measures if visible dust plumes, as defined above, are observed:

- Step 1: The AQCMM or Delegate shall direct more intensive application of the existing mitigation methods within 15 minutes of making such a determination.
- Step 2: The AQCMM or Delegate shall direct implementation of additional methods of dust suppression if Step 1, specified above, fails to result in adequate mitigation within 30 minutes of the original determination.
- Step 3: The AQCMM or Delegate shall direct a temporary shutdown of the activity causing the emissions if Step 2, specified above, fails to result in effective mitigation within one hour of the original determination. The activity shall not restart until the AQCMM or Delegate is satisfied that appropriate additional mitigation or other site conditions have changed so that visual dust plumes will not result upon restarting the shutdown source. The project owner may appeal to the CPM any directive from the AQCMM or Delegate to shut down an activity, if the shutdown shall go into effect within one hour of the original determination, unless overruled by the CPM before that time.

Verification: The AQCMM shall provide the CPM a MCR to include:

A. A summary of all actions taken to maintain compliance with this condition;

B. Copies of any complaints filed with the District in relation to project construction; and

C. Any other documentation deemed necessary by the CPM and AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

AQ-SC5 Diesel-Fueled Engine Control. The AQCMM shall submit to the CPM, in the MCR, a construction mitigation report that demonstrates compliance with the AQCMP mitigation measures for purposes of controlling diesel construction-related emissions. Any deviation from the AQCMP mitigation measures shall require prior and CPM notification and approval and shall require demonstration that such deviation will not result in a new or increased significant environmental impact.

The following off-road diesel construction equipment mitigation measures shall be included in the AQCMP required by **AQ-SC2**:

a. All diesel-fueled engines used in the construction of the facility shall have clearly visible tags issued by the on-site AQCMM showing that the engine meets the conditions set forth herein.

b. All construction diesel engines with a rating of 25 hp or higher shall meet, at a minimum, the Tier 4 Final California Emission Standards for Off-Road Compression-Ignition Engines, as specified in California Code of Regulations, Title 13, section 2423(b)(1), unless a good faith effort to the satisfaction of the CPM that is certified by the on-site AQCMM demonstrates that such engine is not available for a particular item of equipment. In the event that a Tier 4 Final engine is not available for any off-road equipment larger than 25 hp, a Tier 4 Interim or Tier 3 engine shall be used or that equipment shall be equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides (NOx) and diesel particulate matter (DPM) to no more than Tier 3 levels, unless certified by engine manufacturers or the on-site AQCMM that the use of such devices is not practical for specific engine types. For purposes of this condition, the use of such devices is "not practical" for the following, as well as other, reasons.

   1. There is no available retrofit control device that has been verified by either the California Air Resources Board or U.S. Environmental Protection Agency to control the engine in question; or

   2. The construction equipment is intended to be on site for 10 days or less; or

   3. The CPM may grant relief from this requirement if the AQCMM can demonstrate a good faith effort to comply with this requirement and that compliance is not practical. Before a relief may be granted, the AQCMM shall: (i) demonstrate that at least two construction fleet owners/operators in the County of Solano were contacted and that those owners/operators confirmed Tier 4 Final equipment could not be located within the County of Solano during the desired construction schedule; and (ii) the proposed replacement equipment has been evaluated using California Emissions Estimator Model (CalEEMod) or other industry standard emission estimation method and documentation provided to the County of Solano to confirm that necessary project-generated emissions reductions are achieved.

c. The use of a retrofit control device used pursuant to item "b" may be terminated immediately if any condition listed in subitem (1) through (4) is present, provided that the CPM is informed within 10 working days of the termination and that, if the equipment is needed on-site for more than 15 days after the termination, it is replaced within 10 days of the termination with a unit consistent with item "b."

   1. The use of the retrofit control device is excessively reducing the normal availability of the construction equipment due to increased down time for maintenance, and/or reduced power output due to an excessive increase in back pressure.

2. The retrofit control device is causing or is reasonably expected to cause engine damage.
3. The retrofit control device is causing or is reasonably expected to cause a substantial risk to workers or the public.
4. Any other seriously detrimental cause which has the approval of the CPM prior to implementation of the termination.

d. All heavy earth-moving equipment and heavy-duty construction-related trucks with engines meeting the requirements of (b) above shall be properly maintained and the engines tuned to the engine manufacturer's specifications.

e. All diesel heavy construction equipment shall not idle for more than two minutes. Vehicles that need to idle as part of their normal operation (such as concrete trucks) are exempted from this requirement.

f. Minimize idling time for all engines by shutting engines when not in use or limiting idling time to a maximum of five minutes. Provide clear signage for construction workers at all access points.

g. Use California Air Resources Board–approved renewable diesel fuel in off-road construction equipment and on-road trucks when feasible.

h. Construction equipment will employ zero-emission or hybrid powertrains and electric motors when feasible.

i. All portable diesel-fueled engines rated at 50 brake horsepower (bhp) or greater shall maintain valid California Air Resources Board (CARB) Portable Equipment Registration Program (PERP) registration, consistent with applicable laws, including without limitation, California Code of Regulations, Title 13, section 2453, except that the CEC will act in lieu of a local air district and any notifications required to a district should also be provided to the CEC. In addition:

- If providing primary or supplemental building power during an electrical upgrade, there is a 90-day limit.
- If providing building power for >12 months without an electrical upgrade, CEC approval is required.
- If used for PSPS support, CEC approval is required.
- If replacing a failed stationary source generator, a Tier 4 Final engine shall be used, CEC notification is required within 72 hours, and CEC approval may be required within 180 days.

Verification: The AQCMM shall include in the MCR the following to demonstrate control of diesel construction-related emissions:

A. A summary of all actions taken to control diesel construction related emissions;

B. A list of all heavy equipment used on site during that month, including the owner of that equipment and a letter from each owner indicating that equipment has been properly maintained; and

C. Any other documentation deemed necessary by the CPM, and the AQCMM to verify compliance with this condition. Such information may be provided via electronic format or disk at the project owner's discretion.

D. A log of all portable diesel-fueled engines (50 bhp or greater) operating on-site, including their PERP registration numbers, date of arrival, and expected and actual dates of removal to verify compliance with the residence limit. Additionally, the log shall include documentation showing that each use complies with item "i," including any required notifications and time-limit compliance.

5.1.6 Recommended Mitigation Measures

For the non-jurisdictional components, the following mitigation measures (MMs) can and should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations title 14, section 15091(a)(2).

MM AQ-1 Fugitive Dust – General Field crews must limit fugitive dust from PG&E project work at all times. Types of work activities where water trucks or other dust abatement methods are typically required include:

- Construction, demolition; excavation; trenching; grading; sand blasting; and other earthmoving activities.

Visible emissions of fugitive dust from PG&E project activities must be maintained within the project boundary. The crew shall abate dust by:

- Applying water to disturbed areas and to storage stockpiles;
- Covering and securing stockpiled soil at the end of each workday;
- Applying water in sufficient quantities to prevent dust plumes during activities such as clearing and grubbing, backfilling, trenching, and other earth moving activities;
- Limit vehicle speed to <15 mph within approved unpaved work areas and along unpaved roads;
- Vehicles and equipment used to transport bulk materials must be wetted, covered, and provide >6 inches of free board (space between top of truck and load) during transport;
- Clean-up track-out at least daily;
- Escalate preventative measures as needed to match conditions;

- Consider postponing construction activities during high wind events; and
- The crew shall not generate dust in amounts that create a nuisance to wildlife or people, particularly where sensitive receptors such as neighborhoods, schools, and hospitals are located nearby or down-wind. During inactive periods (e.g., after normal working hours, weekends, and holidays), the crew shall apply water or other approved material to form a visible crust on the soil and restrict vehicle access.

MM AQ-2 Portable Equipment Registration Program (PERP) PG&E requires that portable engines be registered into the Statewide Portable Equipment Registration Program (PERP) administered by the California Air Resources Board (CARB), if:

- the engine is portable (mounted on a truck, trailer, skids, or wheels);
- the engine is ≥50 brake horsepower (bhp), and;
- the engine does not provide motive force for a vehicle.

Auxiliary engines mounted on vehicles need to be registered if they are >50 bhp. For PG&E-owned units, PG&E Environmental Management Air Program is responsible for maintaining valid PERP registration with support from Transportation Services. For rental units, the rental vendor is responsible for the PERP registration and must provide PG&E with a copy of the current registration, permit, and placard before use.

Standard Requirements:

If a current placard, registration sticker, and registration paperwork are not on the unit, the crew shall NOT use the piece of equipment, and have it replaced with a unit that is compliant.

For Rental Units: residence time onsite must be logged upon arrival onsite and upon removal. This record shall be retained and made available for review by the project EFS.

Additional Requirements:

- If the PERP unit is being used to provide primary or supplemental power to a building during an electrical upgrade there is a 90-day limit on the use of PERP.
- If the PERP unit is being used to provide primary or supplemental power to a building for >12 months and an electrical upgrade is not happening a local air district permit is required.
- If the PERP generator is being used for PSPS support in the Yolo-Solano AQMD, a local air district permit will be required.
- If the PERP Unit is being used to replace a failed stationary source generator:

- a local district notification is required within 72 hours;
- a Tier 4 Final Engine should be used;
- and a local district permit may be required in 180 days.

5.1.7 References

CARB 2026c – California Air Resources Board (CARB). California State Implementation Plans. Accessed April 2026. Available online at: https://ww2.arb.ca.gov/our-work/programs/california-state-implementation-plans/about

CARB 2026a – California Air Resources Board (CARB). California Air Quality Data Statistics (iADAM). Accessed April 2026. Available online at: https://www.arb.ca.gov/adam/topfour/topfour1.php

CARB 2026b – California Air Resources Board (CARB). California Ambient Air Quality Standards. Accessed April 2026. Available online at: https://ww2.arb.ca.gov/resources/california-ambient-air-quality-standards

Solano County 2008. 2008 Solano County General Plan. Accessed April 2026. Available online at: https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

TT 2025g – Tetra Tech (TN 263284). Air Quality and Greenhouse Gas Technical Report. Dated May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

U.S. EPA 2026a – United States Environmental Protection Agency (U.S. EPA). NAAQS Table. Accessed April 2026. Available online at: https://www.epa.gov/criteria-air-pollutants/naaqs-table

U.S. EPA 2026b – United States Environmental Protection Agency (U.S. EPA). Reconsideration of the National Ambient Air Quality Standards for Particulate Matter. Accessed April 2026. Available online at: https://www.federalregister.gov/documents/2024/03/06/2024-02637/reconsideration-of-the-national-ambient-air-quality-standards-for-particulate-matter

U.S. EPA 2026d – United States Environmental Protection Agency (U.S. EPA). Air Data: Air Quality Data Collected at Outdoor Monitors Across the US. Accessed April 2026. Available online at: https://www.epa.gov/outdoor-air-quality-data

YSAQMD 2007 – Yolo-Solano Air Quality Management District (YSAQMD). Handbook for Assessing and Mitigating Air Quality Impacts. Adopted July 11, 2007. Accessed April 2026. Accessed online at https://www.ysaqmd.org/wp-content/uploads/Planning/CEQAHandbook2007.pdf

YSAQMD 2025 – Yolo-Solano Air Quality Management District (YSAQMD). Draft Triennial Assessment and Plan Update. Accessed April 2026. Accessed online at

https://www.ysaqmd.org/wp-content/uploads/2025/11/2018-2023-Triennial-Plan-Draft-for-Website-1.pdf

5.2 Biological Resources

This section evaluates the potential impacts of the proposed construction and operation of the Corby Battery Energy Storage System (BESS) Project or project with respect to biological resources. The permanent operational facility would be located on an approximately 40.3-acre parcel (project site) southwest of the intersection of Kilkenny Road and Byrnes Road in Solano County, California. Extending northwest from the BESS site, a 1.1-mile, 230-kilovolt (kV) generation tie (gen-tie) line traverses a 19.4-acre corridor. Construction of the gen-tie line would require the removal of approximately 21.6 acres of existing orchards and would require an overhead crossing of Interstate-80 (I-80) to terminate at the PG&E Vaca-Dixon Substation. The gen-tie line would be partially located within the city of Vacaville.

The project site is defined as all areas subject to permanent or temporary disturbance from the construction or operation of the project. The project study area is defined as the project site plus adjacent lands within a 250-foot buffer surrounding the project site and gen-tie alignment. The Solano Irrigation District (SID) maintains and operates an earthen irrigation channel running parallel to Kilkenny Road.

See **Section 3, Project Description**, of this Staff Assessment for a complete description of the project components within the California Energy Commission's (CEC's) Opt-In certification (jurisdictional project components) and project components outside the CEC's Opt-In certification (non-jurisdictional project components).

5.2.1 Environmental Setting

This section describes the environmental setting and baseline conditions for biological resources associated with the project. Vegetation communities within the approximately 65.9-acre BESS site and gen-tie alignment corridor (herein collectively defined as project site) are described to characterize botanical resources and wildlife habitat values. In addition, this section identifies and describes the habitat types that may support special-status plant and wildlife species, wetlands and other jurisdictional waters, riparian habitat, and sensitive natural communities.

5.2.1.1 Existing Conditions

Regional Setting

The project would be located in unincorporated Solano County, between the towns of Vacaville and Dixon, California. Regionally, the project would be located within the western portion of California's northern Central Valley. The surrounding landscape is characterized as agricultural and urban development, with open space occurring primarily along drainages, roads, and undeveloped parcels.

This region is characterized by a Mediterranean climate, which includes dry, hot summers and cool, wet winters. The project region receives an average annual rainfall ranging from approximately 17.4 to 25.4 inches. Annual temperatures range from 36.7 degrees Fahrenheit (°F) to 95.2 °F, with the coolest temperatures in January and warmest temperatures in July (WRCC 2026).

The project study area is located within the Ulatis Creek Hydrologic Unit (Hydrologic Unit Code (HUC) 1802016305) (DWR 2025). There is a mapped reach of Gibson Canyon Creek within the project study area for the gen-tie route. This section of the creek is an intermittent roadside drainage that runs along both sides of I-80. According to the U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI), onsite hydrologic features are mapped as the Solano Irrigation District (SID) Canal (R5UBFx), an excavated perennial drainage channel (R2UBHx), excavated seasonal freshwater emergent wetlands (PEM1Cx), and an intermittent scrub-shrub drainage associated with Gibson Canyon Creek (R4SBC) (USFWS 2026f).

Local Setting

The Solano County General Plan designates the project site as Exclusive Agriculture (A-40) (Solano County 2026). The two gen-tie alignment options are located partially in the city of Vacaville incorporated area zoned land (between Kilkenny Road and I-80) and partially in unincorporated Solano County zoned land (between I-80 and the Vaca-Dixon Substation). The gen-tie laydown area is located entirely on incorporated city of Vacaville zoned land. Land uses for the gen-tie alignment options and laydown area include City of Vacaville Business Park (BP), City of Vacaville Residential High Density (RH), and Solano County Exclusive Agriculture (A-20). Land uses in the immediate vicinity primarily include agriculture, critical energy infrastructure (Vaca-Dixon Substation and transmission corridors), and rural residential areas.

The site is within the 7.5-minute Allendale U.S. Geological Survey (USGS) topographic quadrangle. Elevation in the project study area increases from approximately 76 to 86 feet above mean sea level and features relatively flat terrain. According to the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service, five soil types are present: Capay Clay, 0 percent slopes, Major Land Resource Area (MLRA 17); Clear Lake clay, 0 percent to 2 percent slopes MLRA 17; San Ysidro sandy loam, 0 to 2 percent slopes, San Ysidro sandy loam, thick surface, 0 to 2 percent slopes, and Yolo loam, clay substratum. Clear Lake clay is included on the USDA list of hydric soils commonly associated with wetlands or other waters (USDA 2026b).

Vegetation Communities

This section describes the methods utilized by the applicant to identify and define the vegetation communities and habitats that occur within the project site. Generally, the project site is characterized as a transition point between the Sacramento Valley and the San Francisco Bay-Delta, in the Great Valley ecoregion. The project study area is dominated by fallow farmlands, non-native forests, orchards, and developed lands. The

40.3-acre project site consists entirely of fallow farmland. Historically, this area was utilized for row crops; however, during field surveys the land was fallow and not in active agricultural production. There are no protected trees or oak woodlands within the project site.

Vegetation communities are typically categorized to the alliance level, when applicable, consistent with A Manual of California Vegetation, 2nd Edition (MCV) (Sawyer et al. 2009) and updated in the current online edition (CNPS 2026a). Descriptions of the vegetation communities identified by the applicant are presented below and are mapped in **Figure 5.2-1, Land Cover** (TT 2024b).

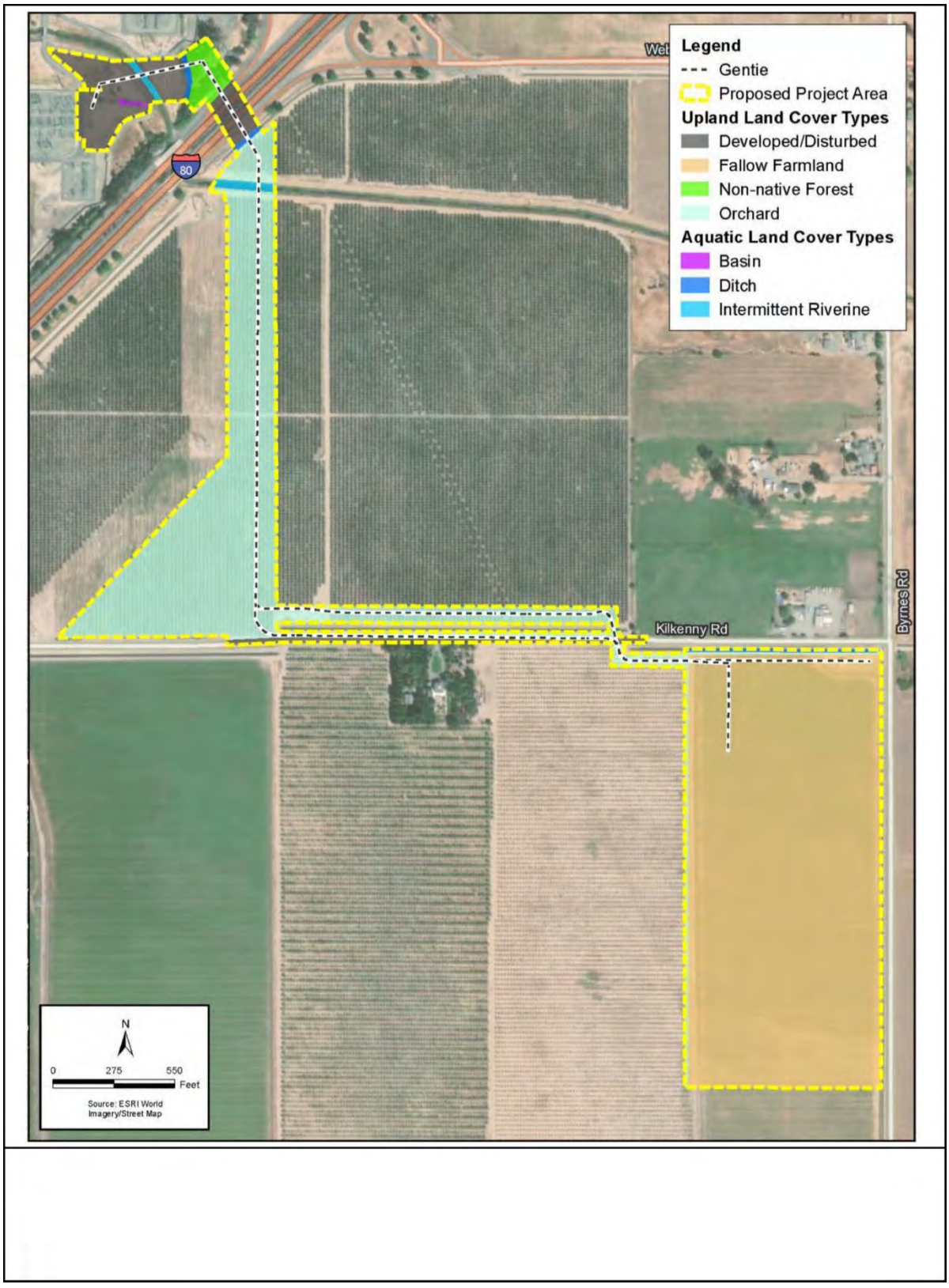
Wild Oats and Annual Brome Grassland (*Avena* spp. - *Bromus* spp. Herbaceous Semi-Natural Alliance). Annual grasslands occur near the PG&E Vaca-Dixon Substation and consist primarily of non-native grass species. This community is often referred to as California annual grassland, and is characterized by an herbaceous layer dominated by non-native grass species including wild oats (*Avena* spp.), ripgut brome (*Bromus diandrus*), cheatgrass (*Bromus tectorum*), yellow star thistle (*Centaurea solstitialis*), radish (*Raphanus* sp.) and filaree (*Erodium* spp.).

Fallow Farmland. Fallow row-crop agricultural land generally consists of intensively managed, annually cultivated fields used for the production of herbaceous crops planted in rows or beds. Historically, the area was used for row-crop agriculture. The site supported an almond orchard from 1999 through 2019, after which it returned to row-crop cultivation from 2019 to 2023. During field surveys, the land was in a fallow state and not under active agricultural production. Vegetation observed on-site was characteristic of previously cultivated fields, with species such as filaree (*Erodium* spp.), field bind weed (*Convolvulus arvensis*), wild mustard (*Sinapis arvensis*), and prostrate knotweed (*Polygonum aviculare*) detected. All of these species are common indicators of disturbed agricultural areas.

Californian Ruderal Forest / Woodland. The vegetation north of I-80 near the PG&E Vaca-Dixon Substation is composed of semi-natural woodland dominated by olive trees (*Olea europea*) and red gum (*Eucalyptus camaldulensis*). The understory consists of oleander (*Nerium oleander*) and other non-native and ruderal plant species.

Orchard. Almond and cherry orchards are the dominant vegetation community located along the gen-tie corridor and where the gen-tie laydown area would be located. Orchards also occur to the west and northwest of the project site.

Figure 5.2-1 Land Cover



Source: TT 2024b

Disturbed / Developed. Disturbed and developed areas include the intersections of the gen-tie corridor at Kilkenny Road, I-80, and the Vaca-Dixon Substation. Disturbed areas also occur along the margins of the roads and frequently disturbed field edges.

The project would result in a total disturbance area of approximately 65.9 acres, of which approximately 24.4 acres would be temporarily disturbed as a result of the project. The 24.4 acres of temporary impacts would occur within the 40.3-acre project site and PG&E Vaca-Dixon Substation parcel and would be limited to areas of non-permanent structures such as the construction laydown areas and PG&E parcel. These temporarily disturbed areas would be revegetated following the completion of construction.

Non-Native Invasive / Noxious Weeds. Non-native invasive or noxious weeds are plants that can directly or indirectly cause impacts to natural resources, wildlife, agriculture, recreation, navigation, public health, or the environment. The California Department of Food and Agriculture (CDFA) and the California Invasive Plant Council (Cal-IPC) have rated invasive or noxious weeds in California based on the threat these species pose to the natural landscape (Cal-IPC 2026).

The applicant identified several non-native invasive plant species within the project site during surveys conducted in 2023 and 2024. **Table 5.2-1** provides a list of the non-native invasive species documented by the applicant.

TABLE 5.2-1 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE PROJECT SITE

Common Name Scientific Name	Rating		Comments
	CDFA[1]	Cal-IPC[2]	
Purple starthistle *Centaurea calcitrapa*	*	Moderate	Grows as an annual, biennial or perennial in fields, roadsides, disturbed open sites, grasslands, overgrazed rangelands, and logged areas in the northern and central coast ranges of California. It is native to Europe. Highly competitive with other plants, often displacing desired vegetation.
Yellow starthistle *Centaurea solstitialis*	*	High	Bushy winter annual from the Mediterranean region that has invaded over 12 million acres in California. Inhabits open hills, grasslands, open woodlands, fields, roadsides, and rangelands. It is considered one of the most serious rangeland weeds in the state.
Hyssop loosestrife *Lythrum hyssopifolia*	None	Moderate	Perennial forb/herb that invades wetlands. Occurs in seasonal wetlands, ditches, and cultivated fields, especially rice fields. Often grows on exposed mud, tolerates some salinity, but is sensitive to heavy frost.
Olive *Olea europea*	None	Limited	Shrub or tree with fleshy one-seeded fruits that are spread by birds and mammals. Native to African, temperate regions of western Asia, and the Mediterranean region of Europe. Commonly

TABLE 5.2-1 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE PROJECT SITE

Common Name Scientific Name	Rating		Comments
	CDFA[1]	Cal-IPC[2]	
			grown as a crop in California, olives have escaped and naturalized widely in southern California and the Central Valley where it can invade grasslands and shrublands.
Red gum *Eucalyptus camaldulensis*	None	Limited	A tree found in southern California which increases the risk of catastrophic wildland fires and over-crowds native plants and trees.
Slender oat *Avena barbata*	None	Moderate	Winter annual grass that grows in nearly every grassland area of the state. It does well in sandy/poor soils, often on the road verges. It is one of the annual grasses that was introduced as a forage species and has replaced the native perennial grasses. It is an early pioneer grass species to freshly disturbed ground, especially when not shaded.
Curly dock *Rumex crispus*	None	Limited	A perennial forb/herb found throughout California. It can grow in many habitats, including grassy places, waste ground, roadsides and nearby sand dunes but is primarily found in flood plains and in agricultural areas.
Wild mustard *Sinapis arvensis*	None	Limited	Annual herb that is native to the Mediterranean region and naturalized in California and many other parts of the world. It can grow up to more than 1 meter tall and has yellow flowers that are typical of mustards. Wild mustard grows in disturbed places and is rarely found in undisturbed wildlands. Seeds are toxic to most mammals.
Ripgut brome *Bromus diandrus*	None	Moderate	An annual grass found throughout California and other western states. Ripgut brome becomes very dry and flammable during the dry season, increasing wildfire frequency which leads to conversion of shrubland and woodland to grassland.
Perennial rye grass *Festuca perennis*	None	Moderate	An annual or biennial grass found throughout California except in the Great Basin and deserts. Introduced to many areas for erosion control, pasture forage, and turf. In California and numerous other regions, it has expanded beyond roadsides, fields, orchards, and vineyards where it has been planted and become invasive, outcompeting native vegetation, especially in grasslands with fertile and/or clay soils.
Mouse barley *Hordeum murinum*	None	Moderate	An annual grass that is native to the Mediterranean. It is common throughout California in disturbed areas and can persist even with frequent mowing by growing nearly flat. It can outcompete native perennials by growing into bare areas and prohibiting their

TABLE 5.2-1 NON-NATIVE INVASIVE WEEDS IDENTIFIED IN THE PROJECT SITE

Common Name Scientific Name	Rating		Comments
	CDFA[1]	Cal-IPC[2]	
			establishment, is salt tolerant, and may increase fire risk by adding fine fuels.

[1] CDFA Ratings:

A = A pest of known economic or environmental detriment and is either not known to be established in California or it is present in a limited distribution that allows for the possibility of eradication or successful containment.

B = A pest of known economic or environmental detriment and, if present in California, it is of limited distribution.

C = A pest of known economic or environmental detriment, if present in California, it is usually widespread.

D = An organism known to be of little or no economic or environmental detriment, to have an extremely low likelihood of weediness, or is known to be a parasite or predator.

Q = An organism or disorder suspected to be of economic or environmental detriment, but whose status is uncertain because of incomplete identification or inadequate information.

* = An asterisk next to the rating indicates that a plant is included in the CCR Section 4500 list of California State Noxious Weeds.

[2] Cal-IPC Ratings:

High = These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.

Moderate = These species have substantial and apparent, but generally not severe, ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.

Limited = These species are invasive, but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.

Alert = An Alert is listed on species with High or Moderate impacts that have limited distribution in California, but may have the potential to spread much farther. Watch = These species have been assessed as posing a high risk of becoming invasive in the future in California.

Aquatic Resources

The applicant conducted a preliminary aquatic resource assessment during reconnaissance surveys on June 1, 2023. The survey was conducted on foot using maps and aerial imagery to look for evidence of aquatic resources, wetland vegetation, hydrology, streams, and bed and bank features. All aquatic resources were mapped using ArcGIS Field Maps. Following the preliminary resource assessment, a comprehensive formal aquatic resource delineation was completed on May 28, 2024. The survey covered the accessible portions of the project site encompassing an area of 177.89 acres plus a 250-foot buffer. Remote mapping was utilized for the inaccessible portions within the PG&E Vaca-Dixon Substation area. The delineation included

documenting hydrology, hydric soils, and hydrophytic vegetation. The delineation field work and mapping were consistent with the 1987 Corps of Engineers Wetland Delineation Manual, as well as the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (USACE 1987; USACE 2008). Data points were recorded using an EOS Arrow 100 GPS unit (sub-meter accuracy), and vascular plants were identified using the Jepson Manual and the National Wetland Plant List.

Table 5.2-2 details the dimensions and jurisdictional status for each feature under the Clean Water Act (Waters of the United States), Porter-Cologne Water Quality Control Act (Waters of the State), and California Fish and Game Code Section 1602. **Figures 5.2-3a**, **5.2-3b**, **5.2-3c**, and **5.2-3d** identify the 17 distinct features totaling 2.96 acres (9,047 linear feet), classified into four categories: basins, ditches, intermittent riverine systems, and seasonal wetlands (TT 2024a). The following provides a description of the four categories of water features identified during the delineation:

Basin. A small 0.02-acre drainage basin is situated within the PG&E Vaca-Dixon Substation. This basin appears to have been constructed in upland areas to manage surface runoff for the substation and is subject to routine maintenance. This basin was remotely mapped by the applicant utilizing aerial imagery, as site access or visibility was restricted during the field surveys.

Ditches. A total of 13 ditches, totaling 1.9 acres (7,138 linear feet), were identified during field surveys. Features outside the PG&E Vaca-Dixon Substation were delineated based on the presence of an ordinary high-water mark (OHWM), while those within the Vaca-Dixon Substation were mapped remotely via aerial imagery. These man-made features serve various functions, including the transport of irrigation water and the drainage of orchards and impervious surfaces at the Vaca-Dixon Substation. The ditches consist of both concrete-lined and earthen channels, all of which appear to be regularly maintained and created in upland rather than realigned natural waterbodies. The SID canal that runs parallel to Kilkenny Road appears to outfall to the Gibson Canyon Creek off Lewis Road.

Intermittent Riverine. A 0.9-acre (1,909 linear feet) section of Gibson Canyon Creek is located outside of the BESS site but within the project study area near the PG&E Vaca-Dixon Substation, where it runs along both sides of I-80. This intermittent waterway was mapped in the field via OHWM indicators and supported active low flows in May 2024. The channel appears to be partially realigned and maintained and is characterized by straightened banks and concrete-lined sections.

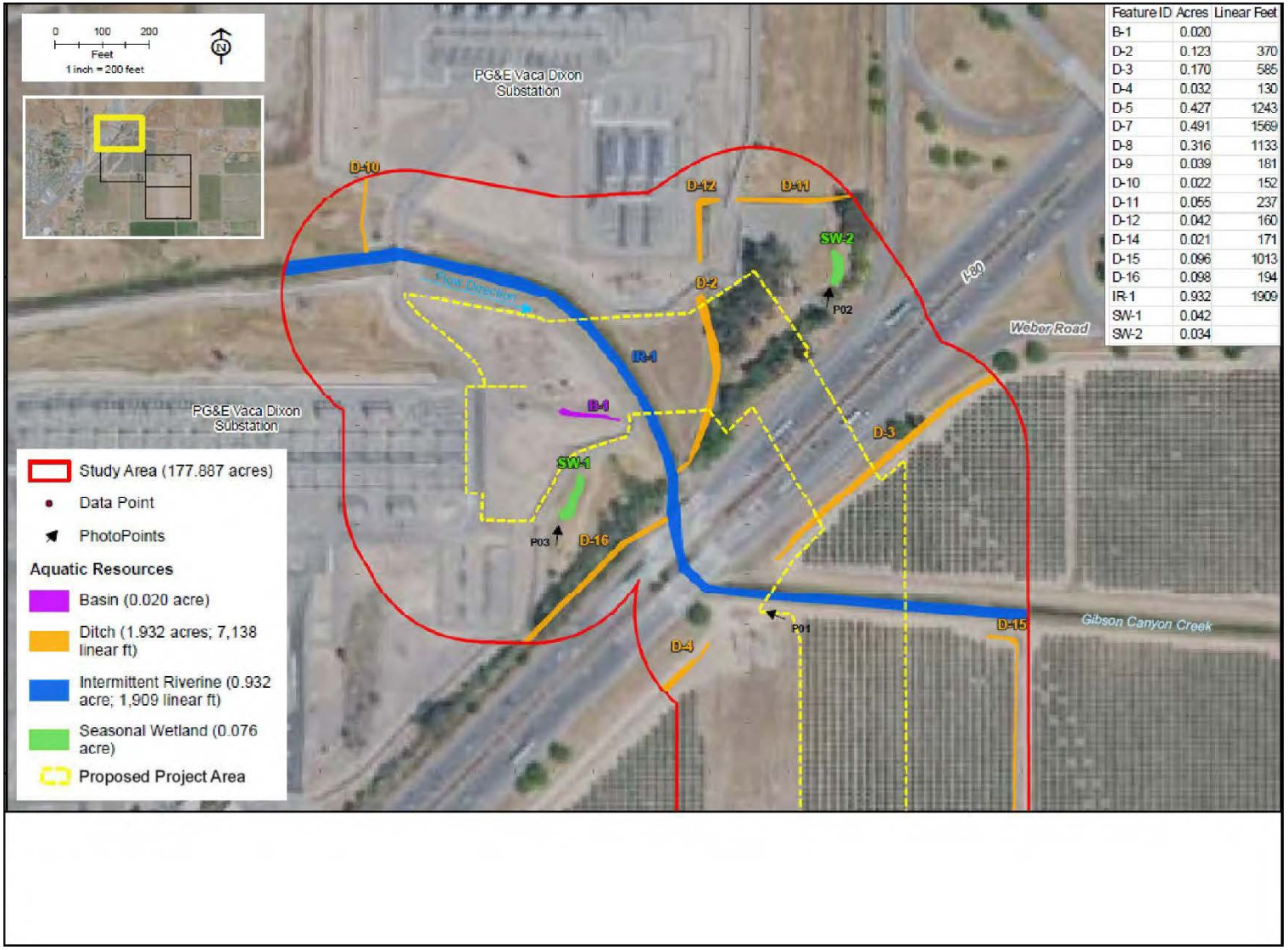
Seasonal Wetland. Two seasonal wetlands, totaling 0.076 acre, were identified within the PG&E Vaca-Dixon Substation property. These features are dominated by a hydrophytic plant community, including creeping wildrye (*Elymus triticoides*), curly dock (*Rumex crispus*), hyssop loosestrife (*Lythrum hyssopifolia*), and seaside barley (*Hordeum marinum*). Field observations also confirmed primary hydrology indicators, most notably prevalent algal matting. The wetlands were situated within a matrix of upland non-native annual grassland, which served as the boundary for the delineation.

Table 5.2-2 AQUATIC RESOURCES DELINEATION RESULTS

Feature ID	Acres	Linear Feet	Proposed Jurisdiction
Basin			
B-1	0.020	N/A	Waters of the State
Basin Subtotal	0.020	N/A	N/A
Ditch			
D-2	0.123	370	Waters of the State; 1602
D-3	0.170	585	Waters of the State
D-4	0.032	130	Waters of the State
D-5	0.427	1,243	Waters of the State
D-7	0.491	1,569	Waters of the State
D-8	0.316	1,133	Waters of the State
D-9	0.039	181	Waters of the State
D-10	0.022	152	Waters of the State; 1602
D-11	0.055	237	Waters of the State; 1602
D-12	0.042	160	Waters of the State; 1602
D-14	0.021	171	Waters of the State
D-15	0.096	1,013	Waters of the State
D-16	0.098	194	Waters of the State; 1602
Ditch Subtotal	1.932	7,138	N/A
Intermittent Riverine			
IR-1	0.932	1,909	Waters of the U.S.; Waters of the State; 1602
Intermittent Riverine Subtotal	0.932	1,909	N/A
Seasonal Wetland			
SW-1	0.042	N/A	Waters of the State
SW-2	0.034	N/A	Waters of the State
Seasonal Wetland Subtotal	0.076	N/A	N/A
Total Aquatic Features	2.960	9,047	N/A

Notes: 1602 – California Fish and Game Code Section 1602
Source: TT 2024a

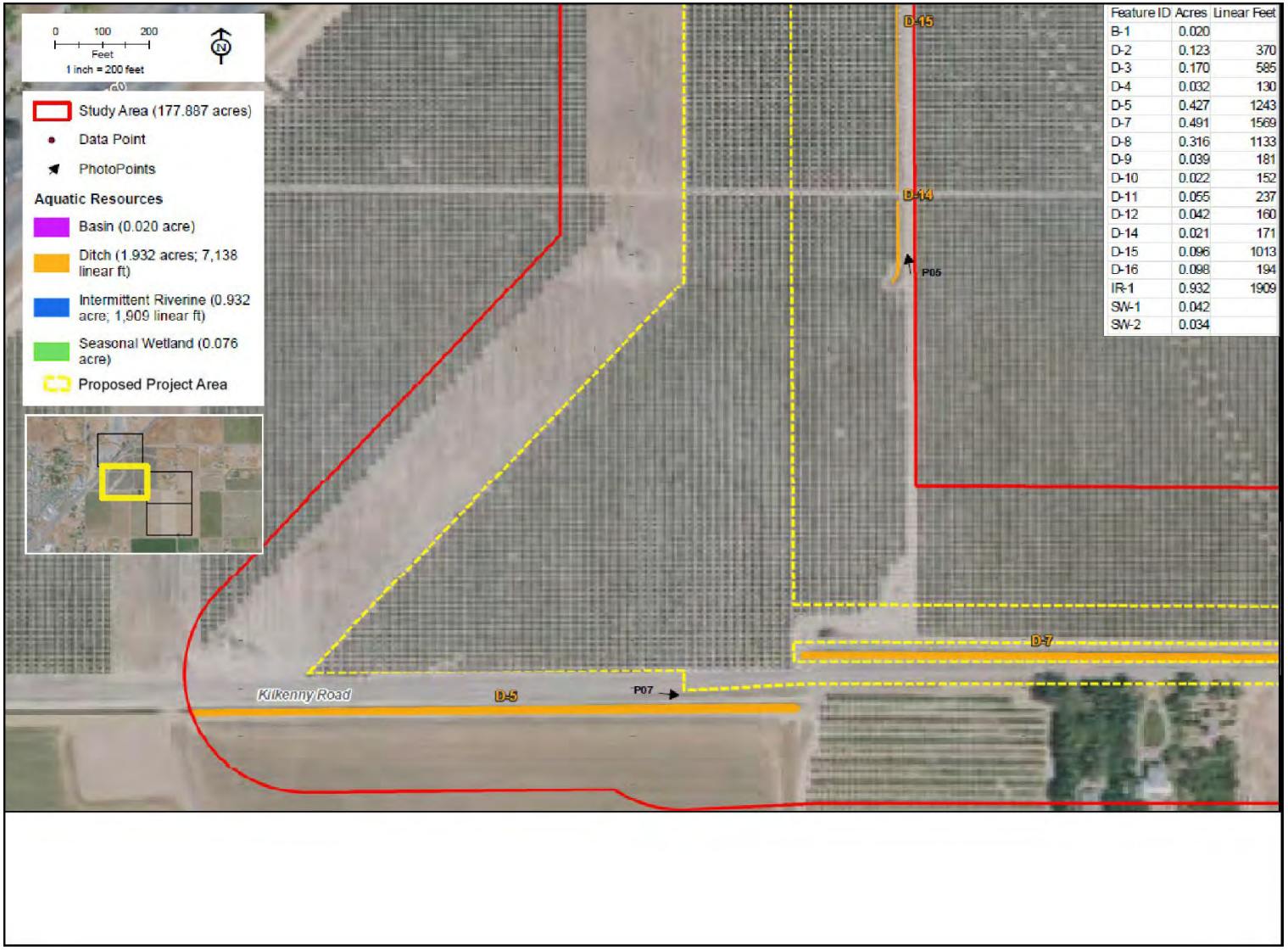
Figure 5.2-3a Aquatic Resources



Feature ID	Acres	Linear Feet
B-1	0.020	
D-2	0.123	370
D-3	0.170	585
D-4	0.032	130
D-5	0.427	1243
D-7	0.491	1569
D-8	0.316	1133
D-9	0.039	181
D-10	0.022	152
D-11	0.055	237
D-12	0.042	160
D-14	0.021	171
D-15	0.096	1013
D-16	0.098	194
IR-1	0.932	1909
SW-1	0.042	
SW-2	0.034	

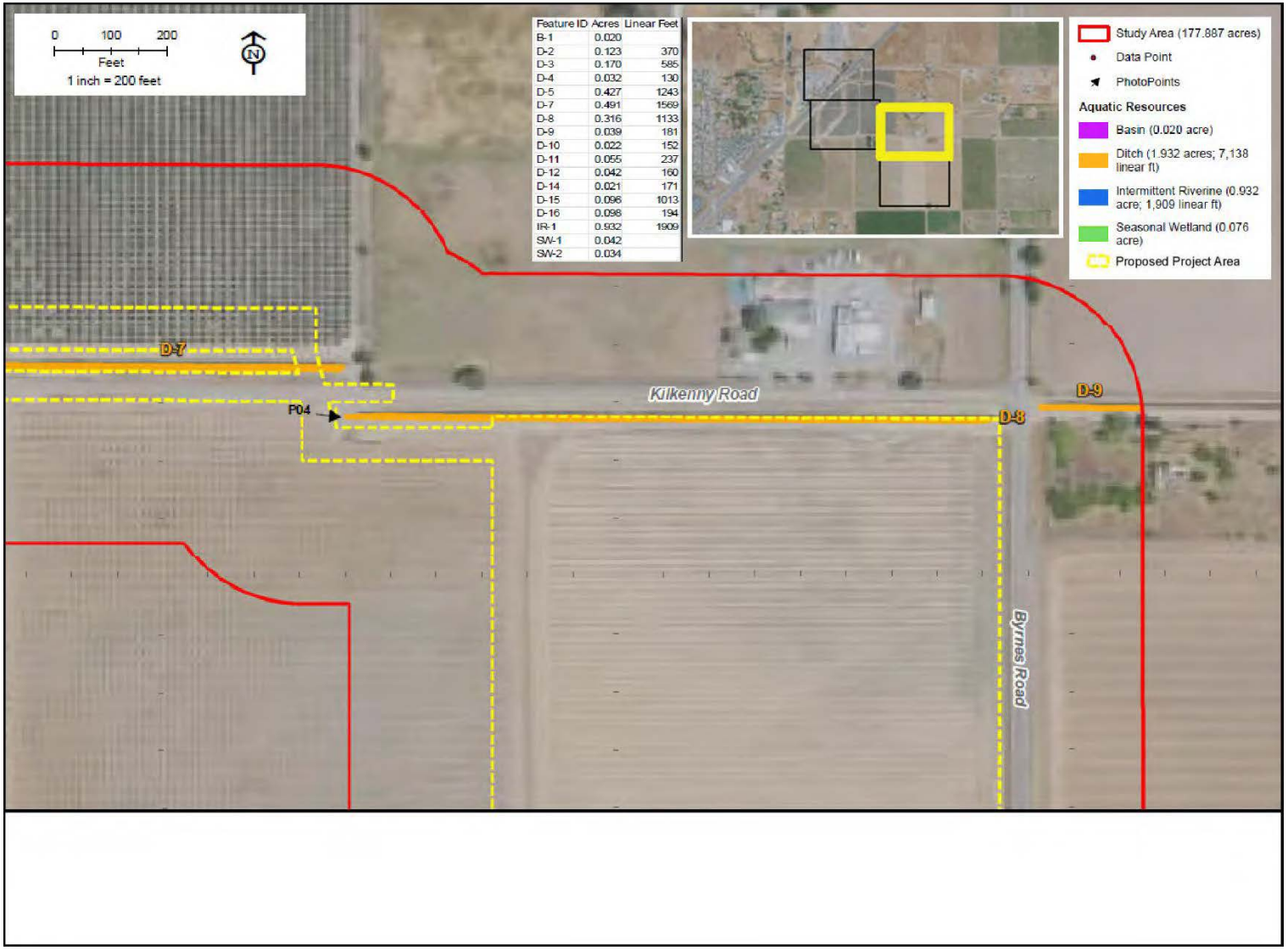
Source: TT 2025b

Figure 5.2-3b Aquatic Resources



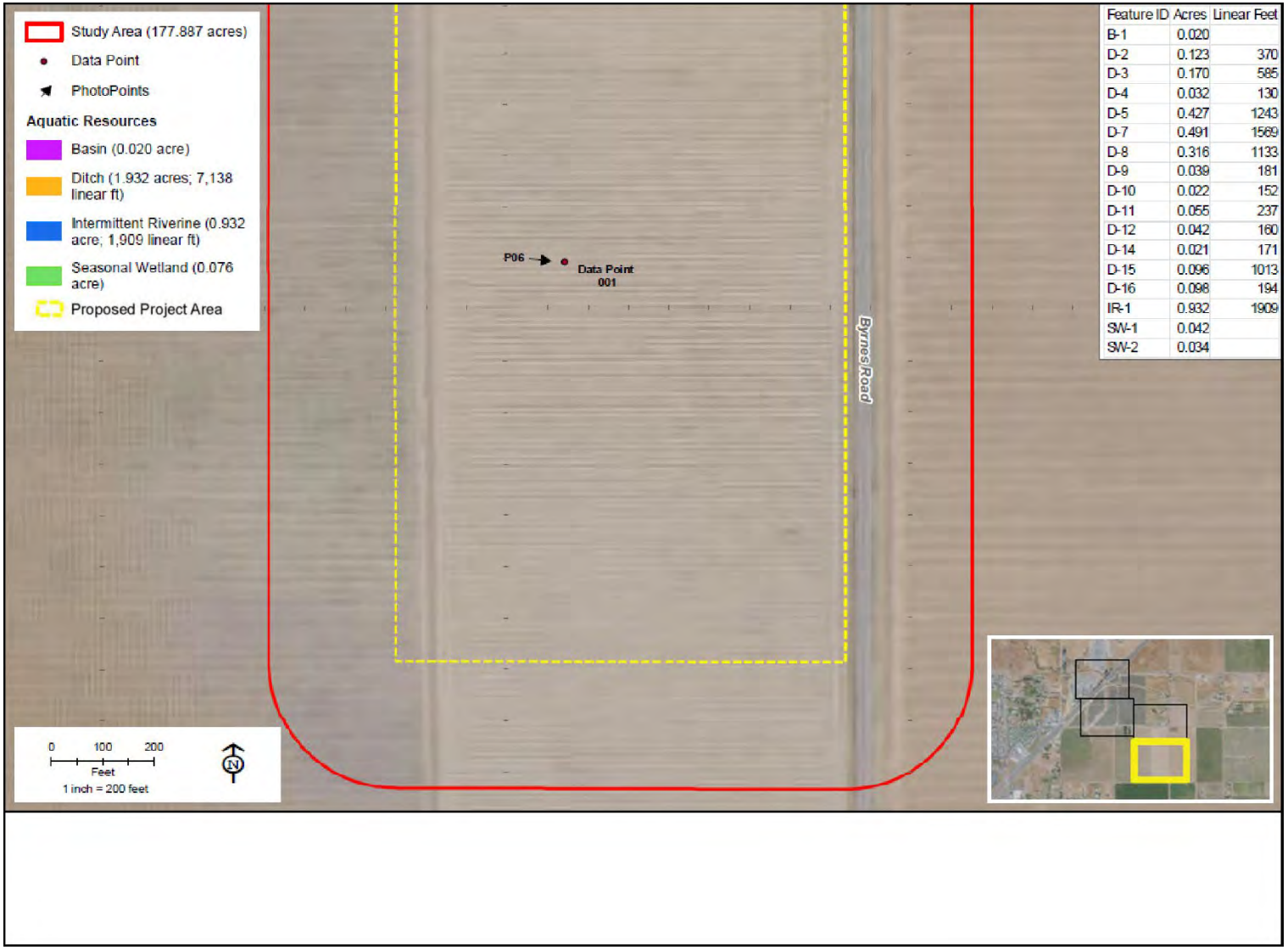
Source: TT 2025b

Figure 5.2-3c Aquatic Resources



Source: TT 2025b

Figure 5.2-3d Aquatic Resources



Source: TT 2025b

Critical Habitat and Special Habitat Designations

The federal Endangered Species Act (ESA) defines critical habitat as specific geographic areas that contain features essential to the conservation of an endangered or threatened species that may require special management and protection. Critical habitat may also include areas that are not currently occupied by the species but would be needed for its recovery. The USFWS and National Marine Fisheries Service (NMFS) publish proposals to designate critical habitat in the Federal Register, a daily publication of the federal government.

Critical habitat for federally listed species does not occur in or adjacent to the project site. The nearest critical habitat designations within a 10 mile radius of the project site are for delta smelt (*Hypomesus transpacificus*) located approximately 3.7 miles to the south of the project site, vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*) and Contra Costa goldfields (*Lasthenia conjugens*) approximately 5.1 miles to the west of the project site, and vernal pool fairy shrimp and vernal pool tadpole shrimp approximately 4.5 miles to the southwest of the project site.

Wildlife Corridors, Special Linkages, and Important Bird Areas

Movement and dispersal corridors that connect large blocks of habitat are essential to the long-term viability of plant and wildlife populations. The California Essential Habitat Connectivity Project (Connectivity Project) was commissioned by the California Department of Transportation (Caltrans) and CDFW to create a statewide assessment of essential habitat connectivity to be used for conservation and infrastructure planning (Spencer et al. 2010). One of its goals was to create the Essential Connectivity Map, which depicts large, relatively natural habitat blocks that support native biodiversity (Natural Landscape Blocks) and areas essential for ecological connectivity between them (Essential Connectivity Areas). These maps do not reflect the needs of particular species but are based on overall biological connectivity and ecological integrity.

Multiple studies (CDFW 2026b; Penrod et al. 2001, 2013; Spencer et al. 2010) mapped wildlife movement and connectivity across the greater San Francisco Bay Area, including the project site in Solano County. These models designated extensive relatively natural habitat blocks that support native biodiversity, as well as critical landscape linkages between them.

Connectivity modeling indicates a lack of wildlife corridors and essential habitat linkages within the project site. According to CDFW (2026b), the site is situated in an area with limited connectivity (Category 1) and is not identified as a significant corridor for big game. The project study area lies outside mapped essential connectivity areas and natural landscape blocks (Spencer et al. 2010; Penrod et al. 2013). Due to existing high-intensity development, habitat fragmentation, and barrier effects along the I-80 corridor, the site holds low biological value for wildlife movement. However, incidental local movement likely occurs.

Important Bird Areas. The Audubon Society has identified Important Bird Areas (IBAs) throughout the western hemisphere that provide essential habitat for birds (Audubon 2026). Although IBAs are non-regulatory designations, they provide important contextual information in determining the types of birds that are occurring in regions within and around the IBA along with the way in which habitats within those regions are being utilized by avian species. These IBAs include sites for breeding, wintering, and migrating birds and can range from only a few acres to thousands of acres in size. There are no IBAs within or immediately adjacent to the project site.

Protected Areas. To identify sensitive biological resources, a review of the California Protected Areas Database (CPAD) and the California Conservation Easement Database (CCED) was conducted. CPAD is a database comprising lands ranging from national parks to small urban open spaces owned and protected by more than 1,000 agencies and non-profits for conservation purposes (CPAD 2026). This review confirmed the presence of protected areas or conservation easements within a 5-mile radius of the project site and are described below (CCED 2026). In addition, there are numerous city parks within the city of Vacaville within 5 miles. In addition, there are numerous conservation easements within a 10-mile radius of the project site (CCED 2026, CPAD 2026).

- Browns Valley Open Space Preserve: The nearest protected open space is the City of Vacaville's Browns Valley Open Space Preserve, located approximately 2.67 miles from the project site and encompassing 5.7 acres (CPAD ID 1215).
- Lagoon Valley Park: Lagoon Valley Park, a 470-acre protected open space (CPAD ID 28309) is located approximately 3.31 miles from the project site.
- Lum Conservation Easement: The nearest conservation easement is the 68.4-acre Lum Easement (CCED ID 12040), held by the Solano Land Trust, located approximately 1.2 miles southwest of the project site.
- Vaca-Station Conservation Easement: The 119.6-acre Vaca-Station Easement (CCED ID 3630), also held by the Solano Land Trust, is located approximately 2.3 miles southeast of the project site.
- Vacaville-Dixon Greenbelt: Two conservation easements within the Vacaville-Dixon Greenbelt, totaling 761.9 acres and 238.2 acres (CCED ID 1391 and 1392), are located north of the project site and are held by the City of Vacaville.
- Beelard 132: The 134.3-acre Beelard 132 easement (CCED ID 3616) is located approximately 3.8 miles southwest of the project site.
- Beelard 157: The 112-acre Beelard 157 (CCED ID 3614) is located approximately 4.4 miles southwest of the project site.
- Schroeder Farm South: The 83.2-acre Schroeder Farm South easement (CCED ID 11994) is located approximately 4 miles northeast of the project site.

- Escano Conservation Easements: Two Escano conservation easements, totaling 156.5 acres and 79.2 acres (CCED ID 12048 and 19763), are located approximately 3.8 miles northeast of the project site.

Common Wildlife

This section describes common wildlife species that were documented during studies and/or surveys conducted by the applicant or that have the potential to occur within or adjacent to the project site. Despite a history of previous disturbances in the general region, including agricultural practices such as the cultivation of row crops and orchards, and the proximity to urban development including Interstate-80, the project site has the potential to support a variety of common wildlife that occurs between native habitats and urbanized areas.

Insects and other terrestrial invertebrates are common and widespread within vacant agricultural fields and orchard habitats in Solano County. Typical insect assemblages include grasshoppers and crickets (e.g., *Melanoplus sp.*, *Gryllus sp.*) associated with disturbed soils and annual grasslands and various ground beetles (*Harpaluss p.*, *Pterostichus sp.*) that can be found in leaf litter. Other species may include aphids (*Aphis* spp.), leafhoppers (*Erythroneura sp.*, *Empoasca* sp.), and stink bugs (*Chinavia sp., Nezara sp.*) that utilize weedy vegetation and orchard crops. Ant species can include native harvester ants (*Pogonomyrmex* sp.) and non-native Argentine ants (*Linepithema sp.*). Bees, wasps, and flies, including native solitary bees (Andrena sp.), honeybees (*Apis melifera*) are also expected to occur.

The project site supports a variety of common reptiles and amphibians that are associated with fallow fields, canals, and developed areas. Western fence lizard (*Sceloporus occidentalis*) and Pacific gopher snake (*Pituophis catenifer catenifer*) were detected during the surveys.

Several mammals were observed or have the potential to occur on the project site. California ground squirrel (*Otospermophilus beecheyi*) and black-tailed jackrabbit (*Lepus californicus*) were observed during the surveys, and several bats have the potential to forage or roost in the region. It is likely that coyotes (*Canis latrans*) are also present. Hoary bat (*Lasiurus cinereus*) is a wide-ranging, migratory tree roosting bat found throughout California that could forage along the various riparian areas and canals in the broader project area. This species is considered a high priority taxon by the Western Bat Working Group (WBWG) due to documented population declines and sensitivity to disturbance, habitat loss, and wind energy mortality. In addition, Yuma myotis (*Myotis yumanensis*) is also known from the region and is widely distributed throughout California. Neither of these species were detected but could forage along the SID canal and Gibson Canyon Creek. However, the project site lacks bridges, culverts, abandoned buildings, or other structures typically used for roosting and onsite vegetation does not provide suitable tree-roosting conditions.

Birds were the most commonly detected species and included a variety of songbirds and raptors. California quail (*Callipepla californica*), bushtit (*Psaltriparus minimus*), house finch (*Haemorhous mexicanus*), and California scrub-jay (*Aphelocoma californica*) were some of the more common species detected during avian surveys. In addition, great egret (*Ardea alba*), mallard (*Anas platyrhynchos*), and great blue heron (*Ardea herodias*) were also observed. Great egret is not a listed species; however, nesting colonies (rookeries) are considered sensitive and may be tracked in the California Natural Diversity Database (CNDDB). A documented active rookery occurs approximately 9.6 miles southeast of the project site, where great egrets have been observed nesting in eucalyptus trees (eBird 2026). This rookery represents the nearest known breeding colony to the Corby BESS project site. Raptors were also commonly observed during the surveys and included red tailed hawk (*Buteo jamaicensis*), red shouldered hawk (*Buteo lineatus*), and Coopers hawk (*Accipiter cooperii*).

Sensitive Biological Resources

This section provides an overview of sensitive biological resources associated with the project site. It also describes the methods used to determine the sensitive vegetation communities and special-status plants and wildlife species observed within or near the project site or with the potential to be present. The specific habitat requirements and the locations of known occurrences of each special-status species were the principal criteria used for inclusion in the lists of special-status species potentially occurring within or near the project site.

Literature Review. As part of developing the baseline conditions for biological resources within the project study area, the applicant performed a comprehensive literature and database search. The focus of the review was to identify biological resources that could potentially occur within the project site and a 10-mile buffer. Sources used during this review included species records from wildlife studies completed at or near the project site, published literature, databases, coordination with CDFW and USFWS, and the professional judgment of biologists representing the applicant.

In addition to the applicants' review described above, CEC staff conducted an independent and thorough literature review that included an evaluation of applicant reports and documents, coordination with the applicable resources agencies, and an updated database assessment. The following list includes the resources considered in the review conducted by CEC staff:

- 2024 Biological Resources Report for the Corby Battery Energy Storage System Project (TT 2024b)
- USFWS Information for Planning and Conservation (IPaC) Program (USFWS 2026a)
- CDFW California Natural Diversity Database, Rarefind Version 5 (CDFW 2026a)
- California Native Plant Society Inventory of Rare and Endangered Plants of California (CNPS 2026b)

- California Wildlife Habitat Relationships Maps and Data (CDFW 2026c)
- Calflora Information on California plants web application (Calflora 2026)
- Soil Survey Geographic Database for California (USDA 2026a)
- Manual of California Vegetation Online (Sawyer et al. 2009)
- CDFW Vegetation Maps and Data (CDFW 2026d)
- California Natural Community List (CDFW 2025b)
- CDFW Special Animals List, October 2025 (CDFW 2025a)
- eBird citizen-based observation network (eBird 2026)
- iNaturalist citizen-based observations (iNaturalist 2026)
- USFWS National Wetlands Inventory data (USFWS 2026b)

The CNDDB and CNPS databases were queried for nine U.S. Geological Survey (USGS) 7.5-minute quadrangles containing and immediately surrounding the site (Allendale, Winters, Merritt, Dixon, Dozier, Elmira, Fairfield North, Mt. Vaca, and Monticello Dam). In addition, the applicant queried records for an additional four USGS 7.5-minute quadrangles to capture all areas within a 10-mile radius of the project site (Davis, Liberty Island, Rio Vista, and Clarksburg) (TT 2024b). CEC staff also conducted a preliminary site assessment using recent aerial imagery accessed via Google Earth (Google Earth 2025) to identify potential sensitive biological resources prior to conducting field visits on February 21, 2025, and November 25, 2025.

The applicant conducted a series of focused and protocol-level surveys for the proposed project. Each of these studies are referenced below and were included in the staff literature review. Survey information provided by the applicant was also considered during the analysis of potential impacts to biological resources (TT 2024b; TT 2024a).

Reconnaissance Surveys. The applicant conducted an initial reconnaissance-level survey of the project site, including the BESS project site and gen-tie alignment on June 1, 2023. The survey included a 250-foot buffer around the project site and gen-tie alignment and was intended to characterize existing baseline conditions and assess the potential for sensitive plants and wildlife to occur within and adjacent to the project site. Inaccessible areas were surveyed using binoculars.

Sensitive Natural Communities

Sensitive natural communities have been previously defined by CDFW as “communities that are of limited distribution statewide or within a county or region and are often vulnerable to environmental effects of projects.” CDFW uses the NatureServe conservation status ranking system to assess the rarity and vulnerability of natural communities (NatureServe 2026). Ranks range from S1 to S5, where “S” stands for state-level status. More recently, CDFW has stated that sensitive natural communities with state ranks of S1 (Critically Imperiled), S2 (Imperiled), or S3 (Vulnerable) should

be addressed in the environmental review process of CEQA and its equivalents (CDFW 2025b). Additionally, vegetation associations that do not have a state ranking are considered sensitive by CDFW.

A review of 13 USGS 7.5-minute quadrangles within a 10-mile radius of the project site identified 12 occurrences of four sensitive natural community types: Coastal and Valley Freshwater Marsh, Coastal Brackish Marsh, Valley Needlegrass Grassland, and Northern Claypan Vernal Pool (TT 2025j). None of these communities are documented within the Allendale quadrangle where the project is located. The nearest mapped sensitive community is Valley Needlegrass Grassland, located approximately 6.5 miles south of the project site within the Jepson Grasslands managed by the Solano Land Trust. CNDDB documented one additional sensitive natural community, Valley Sink Scrub (S1.1), located approximately 2.5 miles from the project site.

The project site is dominated by fallow farmlands, annual grasslands, non-native forests, orchards, and developed lands. No vegetation communities with state rank S1 through S3 or otherwise designated as high priority or potentially rare in the current list, are present on or adjacent to the project site. No sensitive natural communities were identified within or near the project site by the applicant. Sensitive plant communities were not detected by CEC and CDFW staff during a site visit conducted on February 21, 2025.

Nesting Birds

In addition to special-status species, a variety of native migratory birds protected under the Migratory Bird Treaty Act (MBTA), the California Migratory Bird Protection Act (CMBPA), and California Fish and Game Code have the potential to nest and forage within the project site. Orchards, non-native trees, scattered shrubs, electrical towers, and agricultural fields provide suitable nesting and foraging habitats for tree, shrub and ground nesting species. Common native species such as yellow-billed magpie (*Pica nuttalli*), loggerhead shrike (*Lanius ludovicianus*), killdeer (*Charadrius vociferus*), and common raven (*Corvus corax*) may utilize these habitats during the breeding season, which generally extends from February through August.

Special-Status Plants

For the purposes of this staff assessment, special-status plants include:

- Listed, proposed for listing, or candidates for listing as threatened or endangered species (including designated or proposed critical habitat) under the federal ESA
- Listed, or candidates for listing as threatened or endangered under the California Endangered Species Act (CESA)

- Plants assigned a California Rare Plant Rank (CRPR) by the California Native Plant Society (CNPS), including CRPR 1A, 1B, 2, 3, and 4[1]
- Plants listed as rare under the California Native Plant Protection Act
- Plants that meet the definition of rare or endangered under the California Environmental Quality Act section 15380 (b) and (d)

Rare Plant Survey and Vegetation Mapping. The applicant conducted floristic botanical surveys on June 1, 2023, and May 28, 2024, to identify special-status plant species within the project site boundaries. The biologists surveyed the entire project site using meandering transects to ensure complete visual coverage of the project site. Surveys were conducted in accordance with the Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants (USFWS 2000), the Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities (CDFW 2018), and the CNPS Botanical Survey Guidelines (CNPS 2001). Following field data collection, the biologists compared on-site vegetation, habitat characteristics, and elevational ranges to species-specific requirements to evaluate each special-status plant species' potential to occur within the project site.

Survey Results and Potential to Occur. Several special-status plant species have been recorded within a 10-mile radius or within the nine quadrangles surrounding the project site during the literature review (TT 2024a; **Table 5.2-3**). However, most of these species were considered not likely to occur based on a lack of suitable habitat within or adjacent to the project site, the project site occurring outside of the known geographic or elevation ranges, and/or an absence of known occurrences within 10 miles of the project site. A review of 34 special-status plant species documented within 10-mile radius of the project site, combined with site-specific habitat evaluations and reconnaissance surveys, indicates that none of the species' required habitat conditions, such as serpentine substrates, vernal pools, alkaline soils, or intact native grassland, occur within the project site. Most of the project site provides low-quality habitat for special-status plant species due to the high level of disturbance associated with agricultural activities. No special-status plants were observed during the 2023 and 2024 field surveys. All surveys were conducted during the appropriate blooming period when target special-status plant species would be detectable. Plant species with no potential to occur are not discussed further in this document.

The applicant included Delta mudwort (*Limosella australis*) as a special status species that has a low potential to occur; however, CEC staff determined that this species would not likely be present within the project site due to the project site being outside

1 CRPR 3 or 4 species may or may not be considered under CEQA. If a CRPR 3 or 4 species is locally rare, or the population is at an extreme end of the species range, it would be considered for impacts under CEQA.

of the known elevation range of the species. Therefore, CEC staff have not discussed this species further in this document.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
Modest rockcress *Arabis modesta*	CNPS: 4.3 Global Rank: G3 State Rank: S3	Chaparral and lower montane coniferous forest, growing at elevations from 395 - 2,625 feet. Blooming Period is March – July.	**Not Likely to Occur.** No suitable chaparral or montane forest habitat is present, and the project site is outside of the known elevation range for the species. Species was not observed during surveys.
Contra Costa Manzanita *Arctostaphylos manzanita* ssp*. Laevigata*	CNPS: 1B.2 Global Rank: G5T2 State Rank: S2	Chaparral and rocky slopes; growing at elevations from 1,410 – 3,610 feet. Blooming Period is January - March.	**Not Likely to Occur.** No suitable rocky chaparral habitat is present, and the project site is outside of the known elevation range for the species. Species was not observed during surveys.
Ferris' milk-vetch *Astragalus tener* var. *ferrisiae*	CNPS: 1B.1 Global Rank: G2T1 State Rank: S1	Meadows and seeps (vernally mesic), valley and foothill grassland, which is occasionally subalkaline flats; growing at elevations 5 – 245 feet. Blooming Period is April - May.	**Not Likely to Occur.** Although the site occurs within the species' elevation range, the vernally mesic meadows/seeps and subalkaline flats required by the species are absent. Nearest known occurrence is approximately 8 miles to the southeast of the project site. Species was not observed during surveys.
Alkali milk-vetch *Astragalus tener* var. *tener*	CNPS: 1B.2 Global Rank: G2T1 State Rank: S1	Occurs within playas, valley and foothill grassland (adobe clay), and vernal pools, growing at elevations from 5 - 195 feet. Blooming period is March-June.	**Not Likely to Occur.** No suitable playas, vernal pools or alkaline habitat is present within the project site. Not observed during field surveys. Nearest known occurrence is approximately 4.6 miles to the southwest of the project site. Species was not observed during surveys.
Heartscale *Atriplex cordulata* var. *cordulata*	CNPS: 1B.2 Global Rank: GNRT2 State Rank: S2	Occurs within Chenopod scrub, Meadows and seeps, and valley and foothill grassland (sandy), growing at elevations from 0 - 785 feet. Blooming period is April-October.	**Not Likely to Occur.** No suitable chenopod scrub, or meadows and seeps are present within the project site. Nearest known occurrence is approximately 4.6 miles to the southwest of the project site. Species was not observed during surveys.
Crownscale *Atriplex coronata* var. *coronata*	CNPS: 4.2 Global Rank: G4T3 State Rank: S3	Occurs within Chenopod scrub, valley and foothill grassland, and vernal pools, growing at elevations from 5 - 1,935 feet. Blooming period is March-October.	**Not Likely to Occur.** No suitable chenopod scrub or vernal pools are present within the project site. Nonnative grasslands lack the alkaline soils required by the species. Species was not observed during surveys.
Brittlescale *Atriplex depressa*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within mesic areas in alkali grassland, alkali meadow, and alkali scrub; Blooming period is May – October.	**Not Likely to Occur.** No suitable chenopod scrub, or meadows and seeps are present within the project site. Nonnative grasslands lack the alkaline soils required by the species. Nearest known occurrence is

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
			approximately 8.2 miles to the southwest of the project site. Species was not observed during surveys.
Vernal pool smallscale *Atriplex persistens*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within alkaline vernal pools, growing at elevations from 35 - 375 feet. Blooming period is June - October.	**Not Likely to Occur.** No suitable alkaline vernal pools are present within the project site. Nearest known occurrence is approximately 9 miles to the southeast of the project site. Species was not observed during surveys.
Pappose tarplant *Centromadia parryi* ssp. *Parryi*	CNPS: 1B.2 Global Rank: G3T2 State Rank: S2	Occurs within chaparral, coastal prairie, coastal salt marshes and swamps, meadows and seeps, alkaline soils in vernally mesic valley and foothill grassland, growing at elevations below 1,380 feet. Blooming period is May - November.	**Not Likely to Occur.** No suitable chaparral, marshes, swamps, meadows and seeps and alkaline soils are present within the project site. Nearest known occurrence is approximately 7 miles to the southwest of the project site. Species was not observed during surveys.
Parry's rough tarplant *Centromadia parryi* ssp. *Rudis*	CNPS: 4.2 Global Rank: G3T3 State Rank: S3	Occurs within vernal pools, valley and foothill grassland, growing at elevations below 330 feet. Blooming period is May - October.	**Not Likely to Occur.** No suitable vernal pools or alkaline soils are present within the project site. Species was not observed during surveys.
Hispid salty bird's-beak *Chloropyron molle* ssp. *hispidum*	CNPS: 1B.1 Global Rank: G2T1 State Rank: S1	Occurs within meadows and seeps, playas and valley and foothill grassland, growing at elevations from 5-510 feet. Blooming period is June- September.	**Not Likely to Occur.** No suitable meadows and seeps, playas or alkaline soils are present. Nearest known occurrence is approximately 9.7 miles to the south of the project site. Species was not observed during surveys.
Soft salty bird's beak *Chloropyron molle ssp. Molle*	CNPS:1B.2 Global Rank: G4T2 State Rank: S2	Occurs within marshes and swamps (alkaline), playas, valley and foothill grassland, growing at elevations below 10 feet. Blooming period is June - November.	**Not Likely to Occur.** No suitable marshes and swamps, alkaline soils are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Bolander's water-hemlock *Cicuta maculate* var. *Bolanderi*	CNPS: 2B.1 Global Rank: G5T4T5 State Rank: S2?	Occurs within brackish, coastal, and freshwater marshes and swamps; growing at elevations below 655 feet. Blooming period is July - September.	**Not Likely to Occur.** No suitable brackish, coastal, and freshwater marshes and swamps are present within the project site. Nearest known occurrence is approximately 9.5 miles to the southeast of the project site. Species was not observed during surveys.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
Suisun thistle *Cirsium hydrophilum var. hydrophilum*	Federal List: E State List: SE CNPS: 1B.1 Global Rank: G2T1 State Rank: S1	Occurs within marshes and swamps (salt); growing at elevations below 5 feet. Blooming period is from June - September.	**Not Likely to Occur.** No suitable marshes and swamps are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Recurved larkspur *Delphinium recurvatum*	CNPS: 1B.2 Global Rank: G2? State Rank: S2	Occurs within chenopod scrub, cismontane woodland, and valley and foothill grassland, growing at elevations from 10 - 2590 feet. Blooming period is March-June.	**Not Likely to Occur.** No suitable chenopod scrub, cismontane woodland or alkali habitat are present within the project site. Nearest known occurrence is approximately 3.4 miles to the west of the project site. Species was not observed during surveys.
Dwarf downingia *Downingia pusilla*	CNPS: 2B.2 Global Rank: GU State Rank: S2	Occurs within wet areas in valley and foothill grassland, and vernal pools, growing at elevations from 5 – 1,460 feet. Blooming period is from March - May.	**Not Likely to Occur.** No vernal pools are present. Nearest known historical occurrence from 1998 is approximately 1.5 miles to the west of the project site. Species was not observed during surveys.
Small spikerush *Eleocharis parvula*	CNPS: 4.3 Global Rank: G5 State Rank: S3	Occurs within marshes and swamps; growing at elevations from 5 – 910 feet. Blooming period is April - September.	**Not Likely to Occur.** No marshes and swamps are present within the project site. Species was not observed during surveys.
Jepson's coyote-thistle *Eryngium jepsonii*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within valley and foothill grassland, and vernal pools; growing at elevations from 10 – 985 feet. Blooming period is April – August.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. There are no known occurrences within 10 miles of the project site. Species was not observed during surveys.
San Joaquin spearscale *Extriplex joaquinana*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within chenopod scrub, meadows and seeps, playas, and valley and foothill grassland, growing at elevations from 5-2740 feet. Blooming period is April-October.	**Not Likely to Occur.** No suitable alkali habitat is present within the project site. Nearest known occurrence is approximately 4.6 miles to the southwest of the project site. Species was not observed during surveys.
Stinkbells *Fritillaria agrestis*	CNPS: 4.2 Global Rank: G2 State Rank: S2	Occurs within chaparral, cismontane woodland, pinyon and juniper woodland, valley and foothill grassland, on clay or serpentinite substrate; growing at elevations from 35 – 5,100 feet. Blooming period is from March - June.	**Not Likely to Occur.** No chaparral, appropriate soils or woodlands are present within the project site. Species was not observed during surveys.
Fragrant fritillary *Fritillaria liliacea*	CNPS: 1B.2 Global Rank: G2	Occurs within cismontane woodland, coastal prairie, coastal scrub, valley and	**Not Likely to Occur.** No suitable serpentine soils, coastal prairie or low-competition grasslands are

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
	State Rank: S2	foothill grassland, often serpentinite; growing at elevations from 10 – 1,345 feet. Blooming period is February - April.	present within the project site. Nearest known occurrence is approximately 8.5 miles to the southeast of the project site. Species was not observed during surveys.
Adobe-lily *Fritillaria pluriflora*	CNPS: 1B.2 Global Rank: G2G3 State Rank: S2S3	Occurs within chaparral, cismontane woodland, and valley and foothill grassland, often adobe; growing at elevations from 195 – 2,315 feet. Blooming period is February - April.	**Not Likely to Occur.** No suitable chaparral, cismontane woodland or adobe clay soils are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Boggs Lake hedge-hyssop *Gratiola heterosepala*	State List: E CNPS: 1B.2 Global Rank: G2G3 State Rank: S2	Occurs within clay soils in areas of shallow water, lake margins of swamps and marshes, vernal pool margins; growing at elevations from 35 – 7,790 feet. Blooming period is April – August.	**Not Likely to Occur.** No suitable vernal pool soils are present within the project site. Nearest known occurrence is approximately 7.2 miles to the southeast of the project site. Species was not observed during surveys.
Hogwallow starfish *Hesperevax caulescens*	CNPS:4.2 Global Rank: G3 State Rank: S3	Occurs within mesic clay soils in valley and foothill grassland, shallow vernal pools; below 1,655 feet. Blooming period is March - June.	**Not Likely to Occur.** No suitable vernal pool soils are present within the project site. Species was not observed during surveys.
Brewer's western flax *Hesperolinon breweri*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within generally serpentine slopes in chaparral and grasslands; growing at elevations from 100 – 3,100 feet. Blooming period is May – July.	**Not Likely to Occur.** No suitable serpentine soils are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Woolly rose-mallow *Hibiscus lasiocarpos* var. *occidentalis*	CNPS:1B.2 Global Rank: G5T3 State Rank: S3	Occurs within riparian wetlands, marshes and swamps, growing at elevations from 0 - 395 feet. Blooming period is from June - September.	**Not Likely to Occur.** Seasonal freshwater wetlands and Gibson Canyon Creek lack marsh hydrology. Nearest known occurrence is approximately 9.6 miles to the southeast of the project site. Species was not observed during surveys.
Carquinez goldenbush *Isocoma arguta*	CNPS: 1B.1 Global Rank: G1 State Rank: S1	Occurs within alkaline soils in valley and foothill grasslands; growing at elevations from 5 - 65 feet. Blooming period is from August - December.	**Not Likely to Occur.** No suitable alkaline soils are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
Alkali-sink goldfields *Lasthenia chrysantha*	CNPS: 1B.1 Global Rank: G2 State Rank: S2	Occurs within vernal pools; growing at elevations below 655 feet. Blooming period is from February – April	**Not Likely to Occur.** No suitable vernal pools are present within the project site. Nearest known occurrence is approximately 8.5 miles to the southeast of the project site. Species was not observed during surveys.
Contra Costa goldfields *Lasthenia conjugens*	Federal: E CNPS: 1B.1 Global Rank: G1 State Rank: S1	Occurs within mesic areas in cismontane woodland, alkaline playas, valley and foothill grassland, and vernal pools; growing at elevations below 1,540 feet. Blooming period is from March – June.	**Not Likely to Occur.** No suitable vernal pools, playas, cismontane woodlands or alkali soils are present within the project site. Nearest known occurrence is approximately 4.7 miles to the southwest of the project site. Species was not observed during surveys.
Ferris' goldfields *Lasthenia farrisiae*	CNPS: 4.2 Global Rank: G3 State Rank: S3	Occurs within vernal pools; growing at elevations from 65 – 2,295 feet. Blooming period is from February – May.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. Species was not observed during surveys.
Coulter's goldfields *Lasthenia glabrata* ssp. *coulteri*	CNPS: 1B.1 Global Rank: G4T2 State Rank: S2	Occurs within coastal salt marshes and swamps, playas, and vernal pools; growing at elevations from 5 - 405 feet. Blooming period is from February – June.	**Not Likely to Occur.** No coastal salt marshes, swamps, playas or vernal pools are present within the project site. Nearest known occurrence is approximately 7.2 miles to the south of the project site. Species was not observed during surveys.
Delta tule pea *Lathyrus jepsonii* var. *jepsonii*	CNPS: 1B.2 Global Rank: G5T2 State Rank: S2	Occurs within brackish and freshwater marshes and swamps; growing at elevations below 15 feet. Blooming period is from May - July.	**Not Likely to Occur.** No suitable brackish or freshwater marshes and swamps are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Colusa layia *Layia septentrionalis*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within sandy, serpentinite soil in chaparral, cismontane woodland, valley and foothill grassland; growing at elevations 330 – 3,595 feet. Blooming period is from April - May.	**Not Likely to Occur.** No suitable serpentine soils is present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Legenere *Legenere limosa*	CNPS: 1B.1 Global Rank: G2 State Rank: S2	Occurs within vernal pools, growing at elevations from 5 - 2885 feet. Blooming period is from April - June.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. Nearest known historical occurrence from 1983 is approximately 1.8 miles to the south of the project site. Species was not observed during surveys.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
Heckard's peppergrass *Lepidium latipes* var. *heckardii*	CNPS: 1B.2 Global Rank: G4T1 State Rank: S1	Occurs within alkaline flats in valley and foothill grassland; growing at elevations from 5 - 655 feet. Blooming period is from March - May.	**Not Likely to Occur.** No suitable alkali habitat is present within the project site. Nearest known occurrence is approximately 8 miles to the southeast of the project site. Species was not observed during surveys.
Bristly leptosiphon *Leptosiphon aureus*	CNPS: 4.2 Global Rank: G4? State Rank: S4?	Occurs within chaparral, cismontane woodland, coastal prairie, valley and foothill grassland; growing at elevations from 180 – 4,920 feet. Blooming period is from April - July.	**Not Likely to Occur.** No suitable chaparral, woodland or low-competition native grasslands are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Jepson's leptosiphon *Leptosiphon jepsonii*	CNPS: 1B.2 Global Rank: G2G3 State Rank: S2S3	Occurs within usually volcanic chaparral, cismontane woodland, valley and foothill grassland; growing at elevations from 330 – 1,640 feet. Blooming period is from March - May.	**Not Likely to Occur.** No suitable serpentine soils or open, rocky foothill habitat are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
woolly-headed lessingia *Lessingia hololeuca*	CNPS: 3 Global Rank: G2G3 State Rank: S2S3	Occurs within broadleafed upland forest, coastal scrub, lower montane coniferous forest, valley and foothill grassland; growing at elevations from 50 – 1,000 feet. Blooming period is from June - October.	**Not Likely to Occur.** No suitable coastal scrub is present within the project site. Species was not observed during surveys.
Mason's lilaeopsis *Lilaeopsis masonii*	CNPS: 1B.1 Global Rank: G2 State Rank: S2	Occurs within marshes and swamps (brackish, freshwater), and riparian scrub, growing at elevations from 0 - 35 feet. Blooming period is from April - November.	**Not Likely to Occur.** No suitable tidal marsh habitat is present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Delta mudwort *Limosella australis*	CNPS: 2B.1 Global Rank: G5 State Rank: S2	Occurs within marshes and swamps (brackish, freshwater), and riparian scrub, growing at elevations from 0 - 10 feet. Blooming period is from May - August.	**Not Likely to Occur.** No suitable tidal freshwater or brackish marshes are within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Napa lomatium *Lomatium repostum*	CNPS: 4.2 Global Rank: G2G3 State Rank: S2S3	Occurs within flat to steep slopes in chaparral, broadleafed upland forest, and cismontane woodland; growing at	**Not Likely to Occur.** No suitable serpentine soils or foothill habitat is present within the project site. The project site is outside of the known elevation range

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
		elevations from 295 - 4,725 feet. Blooming period is from March - June.	for the species. Species was not observed during surveys.
Heller's bushmallow *Malacothamnus helleri*	CNPS: 3.3 Global Rank: G2Q State Rank: S2	Occurs within chaparral (sandstone), riparian woodland (gravel); growing at elevations from 1,000 – 2,085 feet. Blooming period is from May - July.	**Not Likely to Occur.** No suitable chaparral or foothill woodland habitat is present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Three-ranked hump moss *Meesia triquetra*	CNPS: 4.2 Global Rank: G5 State Rank: S4	Occurs within bogs and fens, meadows and seeps, subalpine coniferous forest, upper montane coniferous forest (mesic); growing at elevations from 4,265 – 9,690 feet. Blooming period is July.	**Not Likely to Occur.** No suitable bogs and fens, meadows and seeps, or coniferous forest are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Marsh microseris *Microseris paludosa*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within cismontane woodland, closed-cone coniferous forest, coastal scrub, valley and foothill grassland; growing at elevations from 15 – 1,165 feet. Blooming period is from April - July.	**Not Likely to Occur.** No suitable coastal prairie or scrub are present within the project site. There are no known occurrences within 10 miles of the project site. Species was not observed during surveys.
Sylvan microseris *Microseris sylvatica*	CNPS: 4.2 Global Rank: G4 State Rank: S4	Occurs within chaparral, cismontane woodland, Great Basin scrub, pinyon and juniper woodland, valley and foothill grassland; growing at elevations from 150 – 4,920 feet. Blooming period is from March - June.	**Not Likely to Occur.** No suitable coastal or coast range foothill habitat is present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Little mousetail *Myosurus minimus* ssp. *apus*	CNPS: 3.1 Global Rank: G5T2Q State Rank: S2	Occurs within valley and foothill grassland, and alkaline vernal pools; growing at elevations from 65 - 2,100 feet. Blooming period is from March - June.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. Species was not observed during surveys.
Baker's navarretia *Navarretia leucocephala* ssp. *bakeri*	CNPS: 1B.1 Global Rank: G4T2 State Rank: S2	Occurs within mesic areas in cismontane woodland, lower montane coniferous forest, meadows and seeps, valley and foothill grassland, and vernal pools; growing at elevations from 15 - 571 feet. Blooming period is from April - June.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. Nearest known occurrence is approximately 1.5 miles to the west of the project site. Species was not observed during surveys.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
Colusa grass *Neostapfia colusana*	Federal: T State: E CNPS: 1B.1 Global Rank: G1 State Rank: S1	Occurs within vernal pools, in adobe clay soils; growing at elevations from 15 - 655 feet. Blooming period is from May - August.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. There are no known occurrences within 10 miles of the project site. Species was not observed during surveys.
San Joaquin Valley Orcutt grass *Orcuttia inaequalis*	Federal: T State: E CNPS: 1B.1 Global Rank: G1 State Rank: S1	Occurs within vernal pools, in adobe clay soils; growing at elevations from 35 – 2,475 feet. Blooming period is from April - September.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. Nearest known occurrence is approximately 8.5 miles to the south of the project site. Species was not observed during surveys.
Gairdner's yampah *Perideridia gairdneri* ssp. *gairdneri*	CNPS: 4.2 Global Rank: G5T3T4 State Rank: S3S4	Occurs within vernally mesic, broadleafed upland forest, chaparral, coastal prairie, valley and foothill grassland, and vernal pools; growing at elevations from 0 – 2,000 feet. Blooming period is from June - October.	**Not Likely to Occur.** No suitable forest, chaparral, coastal prairie or foothill grasslands are present within the project site. Species was not observed during surveys.
Bearded popcornflower *Plagiobothrys hystriculus*	CNPS: 1B.1 Global Rank: G2 State Rank: S2	Occurs within mesic valley and foothill grassland, vernal pool margins; growing at elevations below 900 feet. Blooming period is from April - May.	**Not Likely to Occur.** No vernal pool or mesic valley and foothill grassland is present within the project site. Nearest known occurrence is approximately 2.2 miles to the northwest of the project site. Species was not observed during surveys.
Delta woollymarbles *Psilocarphus brevissimus var. multiflorus*	CNPS: 4.2 Global Rank: G4T3 State Rank: S3	Occurs within vernal pools; growing at elevations from 35 – 1,640 feet. Blooming period is from May - June.	**Not Likely to Occur.** No suitable vernal pools are present within the project site. Species was not observed during surveys.
California alkali grass *Puccinellia simplex*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within seasonally wet alkaline wetlands, sinks, flats, vernal pools, and lake margins; growing at elevations from 5 – 3,050 feet. Blooming period is from March - May.	**Not Likely to Occur.** No suitable alkali habitat is present within the project site. Nearest known occurrence is approximately 8.4 miles to the southeast of the project site. Species was not observed during surveys.
Lobb's aquatic buttercup *Ranunculus lobbii*	CNPS: 4.2 Global Rank: G4 State Rank: S3	Occurs within mesic habitats in cismontane woodland, North Coast coniferous forest, valley and foothill grassland, and vernal pools; growing at	**Not Likely to Occur.** No suitable mesic habitat or vernal pools are present within the project site. Species was not observed during surveys.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
		elevations from 50 – 1,540 feet. Blooming period is from February - May.	
Sanford's arrowhead *Sagittaria sanfordii*	CNPS: 1B.2 Global Rank: G3 State Rank: S3	Occurs within marshes and swamps (shallow freshwater); growing at elevations below 2,135 feet. Blooming period is from May - November.	**Not Likely to Occur.** No suitable marshes and swamps are present within the project site. There are no known occurrences within 10 miles of the project site. Species was not observed during surveys.
Keck's checkerbloom *Sidalcea keckii*	Federal: E CNPS: 1B.1 Global Rank: G2 State Rank: S2	Occurs within cismontane woodland, valley and foothill grassland, in clay and serpentinine substrates; growing at elevations from 245 - 2,135 feet. Blooming period is from April - May.	**Not Likely to Occur.** No suitable serpentine soils are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Long-styled sandspurrey *Spergularia macrotheca var. longistyla*	CNPS: 1B.2 Global Rank: G5T2 State Rank: S2	Occurs within marshes and swamps, meadows and seeps; growing at elevations below 835 feet. Blooming period is from February - May.	**Not Likely to Occur.** No suitable marshes and swamps or meadows and seeps are present within the project site. There are no known occurrences within 10 miles of the project site. Species was not observed during surveys.
Northern slender pondweed *Stuckenia filiformis* ssp. *alpina*	CNPS: 2B.2 Global Rank: G5T5 State Rank: S2S3	Occurs within shallow freshwater marshes and swamps; growing at elevations from 985 – 7,055 feet. Blooming period is from May - July.	**Not Likely to Occur.** No suitable freshwater marshes and swamps are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Suisun Marsh aster *Symphyotrichum lentum*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within brackish and freshwater marshes and swamps; growing at elevations below 10 feet. Blooming period is from May - November.	**Not Likely to Occur.** No suitable brackish and freshwater marshes and swamps are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Two-fork clover *Trifolium amoenum*	Federal: E CNPS: 1B.1 Global Rank: G1 State Rank: S1	Occurs within coastal bluff scrub, valley and foothill grasslands (sometimes serpentinite); growing at elevations from 15 – 1,360 feet. Blooming period is from April - June.	**Not Likely to Occur.** No suitable coastal scrub or coastal grasslands, or low-competition native grasslands are present within the project site. Nearest known historical occurrence from 1909 is approximately 1.8 miles to the south of the project site. Species was not observed during surveys.
Saline clover *Trifolium hydrophilum*	CNPS: 1B.2 Global Rank: G2 State Rank: S2	Occurs within marshes and swamps, mesic alkaline areas in valley and foothill grasslands, vernal pools; growing at	**Not Likely to Occur.** No suitable marshes and swamps or alkali habitat is present within the project site. Nearest known occurrence is approximately 6.5

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
		elevations below 985 feet. Blooming period is from April - June.	miles to the southeast of the project site. Species was not observed during surveys.
Crampton's tuctoria *Tuctoria mucronata*	Federal: E State: E CNPS: 1B.1 Global Rank: G1 State Rank: S1	Occurs within mesic valley and foothill grasslands, vernal pools; growing at elevations from 15 - 35 feet. Blooming period is from April - August.	**Not Likely to Occur.** No suitable mesic valley and foothill grasslands or vernal pools are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.
Oval-leaved viburnum *Viburnum ellipticum*	CNPS: 2B.3 Global Rank: G4G5 State Rank: S3	Occurs within chaparral, cismontane woodland, lower montane coniferous forest; growing at elevations from 705 – 4,595 feet. Blooming period is from May - June.	**Not Likely to Occur.** No suitable chaparral, cismontane woodland or coniferous forest are present within the project site. The project site is outside of the known elevation range for the species. Species was not observed during surveys.

[1]FEDERAL STATUS DESIGNATIONS

ESA (Federal Endangered Species Act):

FT = Federally threatened
FP-T = Federally proposed as threatened
FE = Federally endangered
S = Sensitive

STATE STATUS DESIGNATIONS

CESA (California Endangered Species Act):

ST = State threatened
SE = State endangered
SC-E = State candidate for listing as endangered
SC-T = State candidate for listing as threatened

CNPS (California Native Plant Society – California Rare Plant Rank):

1B = Rare, threatened, or endangered in California and elsewhere
2B = Rare, threatened, or endangered in California but mostly common elsewhere
4 = Watch list (limited distribution)
Threat Rank:

[2]POTENTIAL TO OCCUR DEFINITIONS:

The definitions provided below are general parameters used to establish a baseline potential for each species to occur. These may be slightly altered due to survey results, professional experience, and/or coordination with the applicable resource agencies.

Present: Observed within or near project site during surveys.

High: Suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project site

Moderate: Suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project site OR typically suitable habitat is present; project site is within geographic and elevation ranges of species; and somewhat recent (within 20 years) record(s) located within 10 miles of project site.

Low: Typically or occasionally suitable habitat is present; project site is outside of known geographic and/or elevation ranges; and recent (within 10 years) record(s) located within 10 miles of project site OR typically or occasionally suitable habitat is present; project site is within known geographic and elevation ranges; and recent (within 10 years) or somewhat recent (within 20 years) located within 10 miles of project site.

Not Likely To Occur: Typically, or occasionally suitable habitat is not present and/or the project site is outside of the known geographic and/or elevation ranges of the species; no known records located within 10 miles of project site.

TABLE 5.2-3 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS PLANTS WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range, Habitat, and Blooming Period	Potential to Occur[2] and Comments
0.1 = Seriously threatened in California (over 80% of occurrences threatened/high degree and immediacy of threat) 0.2 = Moderately threatened in California (20-80% occurrences threatened/moderate degree and immediacy of threat) 0.3 = Not very threatened in California (less than 20% of occurrences threatened/low degree and immediacy of threat or no current threats known) *NatureServe Global / State Ranks:* (G/S) 1 = Critically imperiled; at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors (G/S) 2 = Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors (G/S) 3 = Vulnerable; at moderate risk of extinction or elimination due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (G/S) 4 = Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of recent local declines, threats, or other factors (G/S) 5 = Secure; at very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats SNR = State not ranked T = Subspecies/varieties receive a “T” rank attached to the “G” rank. With subspecies/varieties, the “G” rank reflects the condition of the entire species, whereas the “T” rank reflects the global situation of just the subspecies or variety.			**Sources:** Calflora 2026, CDFW 2026a, CNPS 2026b, TT 2024b, NatureServe 2026, USFWS 2026a

Special-Status Wildlife

For the purposes of this staff assessment, special-status wildlife species include:

- Listed, proposed for listing, or candidates for listing as threatened or endangered species (including designated or proposed critical habitat) under the federal ESA
- Listed, or candidates for listing as threatened or endangered under the CESA
- Bald and golden eagles protected under the Bald and Golden Eagle Protection Act (BGEPA)
- Designated as fully protected (FP) by CDFW
- Designated as a species of special concern (SSC) by CDFW

Species identified by the USFWS as Birds of Conservation Concern (BCC) do not, by that designation alone, qualify as special-status species under CEQA. However, if a BCC species also meets the definition of a special-status species, as defined above, it is considered a special-status species for purposes of CEQA analysis and is evaluated for potential impacts. These species are noted in **Table 5.2-5** below. In addition to the literature review and reconnaissance-level surveys described above, the applicant conducted several focused and protocol-level surveys for special-status wildlife species. **Table 5.2-4** summarizes the wildlife surveys that were conducted by the applicant.

TABLE 5.2-4 SUMMARY OF WILDLIFE SURVEYS CONDUCTED FOR THE PROJECT

Survey Focus	Survey Type	Dates
Reconnaissance-level survey	Focused	June 1, 2023
Burrowing Owl (*Athene cunicularia*)	Protocol (Breeding and Non-Breeding Season)	December 23, 2024 (non-breeding) May 23, 2024 (breeding) May 24, 2024 (breeding) June 17, 2024 (breeding) July 10, 2024 (breeding) January 7, 2025 (non-breeding) January 17, 2025 (non-breeding) January 31, 2025 (non-breeding) February 18, 2025 (non-breeding) November 17, 2025 (non-breeding) November 25, 2025 (non-breeding)
Swainson's Hawk (*Buteo swainsoni*)	Protocol (Nesting and Non-Nesting Season)	March 16, 2023 (Period I) April 13, 2023 (Period III) April 14, 2023 (Period III) April 19, 2023 (Period III) June 27, 2023 (Period V) June 28, 2023 (Period V) June 29, 2023 (Period V)
Aquatic resources delineation surveys	Focused	June 1, 2023 May 28, 2024

Source: TT 2024a

Burrowing Owl. Protocol-level surveys for western burrowing owl (*Athene cunicularia*) were conducted on December 23, 2024, May 23 and May 24, 2024, June 17, 2024, and

July 10, 2024. Additional non-breeding season surveys were completed on January 7, January 17, January 31, 2025, and February 17, 2025. Follow-up surveys were conducted on November 17, and November 25, 2025, in response to public comments reporting potential burrowing owl sightings within or near the project site.

Surveys were generally conducted in accordance with the recommended methods outlined in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012). Surveys were conducted on May 24, 2024, June 17, 2024, and July 10, 2024, which did not follow the recommended spacing, and the February 18, 2025, survey occurred two days outside the recommended survey window. These were minor timing variations that do not constitute substantive deviations from the Staff Report protocol and do not affect the adequacy of the overall survey effort.

The surveys covered the project site and a 500-foot buffer. Biologists walked transects no more than 20 meters apart and used binoculars and a spotting scope in areas that were inaccessible. Biologists assessed the suitability of habitat within the survey area, including but not limited to burrows of sufficient size for burrowing owl use, and any burrow surrogates (e.g., culverts, pipes) and documented any sight or sign of western burrowing owls. GPS coordinates of suitable burrows, burrow surrogates and burrowing owl observations were collected in ArcGIS Field Maps.

Swainson's Hawk. Surveys for Swainson's hawk (*Buteo swainsoni*) were conducted on March 16, 2023 (Period I); April 13, 2023, April 14, 2023, and April 19, 2023 (Period III); and June 27 through June 29, 20023 (Period V). These surveys followed the recommended protocol outlined in *The Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000). The surveys covered the project site and a 0.5-mile buffer. Survey efforts were primarily conducted as windshield surveys; however, pedestrian surveys were conducted in areas where vehicle access or parking was unavailable. Biologists used binoculars and a spotting scope, to identify bird species and locate active nests. To maximize detection probability for nesting raptors, potential nest trees were inspected from multiple vantage points. Locational data was collected in ArcGIS Field Maps.

Survey Results and Potential to Occur. Surveys conducted by the applicant identified two special-status wildlife species present within the 0.5-mile buffer. These included Swainson's hawk, a state threatened species and white-tailed kite (*Elanus leucurus*), a state fully protected species. No burrowing owls were observed within the project site; however, one burrowing owl was observed during Swainson's hawk surveys approximately 0.5-mile northeast of the project site in 2023 but was not observed subsequently during 2024 or 2025 surveys.

CEC staff determined that 16 additional species have at least some potential to occur in or near the project site based on the presence of suitable habitat, proximity to documented occurrences, and/or coordination with CDFW (see **Table 5.2-5**). These include the following wildlife species: Crotch's bumble bee (*Bombus crotchii*), a state

candidate species; monarch butterfly (*Danaus plexippus*), a federal candidate species; northwestern pond turtle (*Actinemys marmorata*), proposed for federal listing as a threatened species and a state species of special concern; golden eagle (*Aquila chrysaetos*), a state fully protected and watch list species; northern harrier (*Circus cyaneus*), a state species of special concern; grasshopper sparrow (*Ammodramus savannarum*), a state species of special concern; American peregrine (*Falco peregrinus anatum*); prairie falcon (*Falco mexicanus*), a state watch list species; bald eagle (*Haliaeetus leucocephalus*), a state endangered and state fully protected species; black-crowned night heron (*Nycticorax nycticorax*), American badger (*Taxidea taxus*), a state species of special concern, and western red bat (*Lasiurus blosseevillii*), a state species of special concern; hoary bat (*Lasiurus cinereus*) a Western Bat Working Group high priority species, and Yuma myotis bat (*Myotis yumanensis*) a Western Bat Working Group low or medium priority species.

Several species identified during the literature review were determined to have no potential to occur based on the project site being located outside of known ranges for these species, a lack of suitable habitat, the absence of recent records or documentation, coordination with the applicable resource agencies, and/or CEC staff's professional judgment. Please refer to **Table 5.2-5** for a complete list of these species and the potential to occur within the project study area. Wildlife species with no potential to occur are not discussed further in this document.

Federal- and State-Listed Wildlife. No federally listed species were observed within the project site during surveys conducted by the applicant. Swainson's hawk, a state-listed threatened species, was observed during surveys conducted by the applicant. Additional species were determined to have potential to occur within or near the project site, including western burrowing owl, which has a high potential to occur, and Crotch's bumble bee, which has a moderate potential to occur; both species are candidates for listing under CESA.

Fully Protected Wildlife. Three species designated as fully protected under the California Fish and Game Code have the potential to occur within or near the project site. Golden eagle has a moderate potential to nest and forage within the project study area and is also protected under the BGEPA. Bald eagle has a low potential to forage within the project study area and is also protected under the BGEPA. White-tailed kite was observed during field surveys and has a high potential to nest and forage within the project study area.

Other Special-Status Wildlife. Based on CEC staff's review, one additional special-status wildlife species, the American badger, was determined to have a high potential to occur within the project site based on the presence of suitable habitat and CNDDB occurrences within 3.1 miles of the project site. No American badger sign (e.g., dens, tracks, scat, or dig-outs) was observed during field surveys.

Five special-status wildlife species, northern harrier, American peregrine falcon, western red bat, hoary bat, and Yuma myotis were determined to have a moderate potential to occur within the project site due to the presence of suitable habitat, although none were detected during field surveys. The nearest CNDDB occurrence for northern harrier is approximately 8 miles northwest of the project site. The nearest known occurrence for western red bat is approximately 8.7 miles northwest of the project site. The potential presence of hoary bat and Yuma myotis is based on suitable foraging habitat as these species are not tracked in CNDDB.

In addition, four special-status wildlife species were determined to have a low potential to occur within the project site due to the presence of marginal or limited suitable habitat and the absence of regional occurrences, and none were detected during field surveys. These include grasshopper sparrow, northwestern pond turtle, monarch butterfly, and prairie falcon.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
Invertebrates			
Obscure bumble bee (*Bombus caliginosus*)	Global Rank: G2G3 State Rank: S1S2	Cool, humid, coastal environments. Open coastal prairies, meadows within the coast range.	**Not Likely to Occur.** There are no known occurrences within 10 miles of the project s.
Crotch's bumble bee (*Bombus crotchii*)	State List: SC-E Global Rank: G2 State Rank: S2	Found between San Diego and Redding in a variety of habitats, including open grasslands, shrublands, chaparral, desert margins, and semi-urban settings; nests underground but nest characteristics not well documented; generalist forager with typical floral resources including plants in the Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Boraginaceae families; overwinter in soft, disturbed soils or under leaf litter or other debris, but very little is known about hibernacula characteristics.	**Moderate.** No native floral resources are present, but non-native floral resources occur throughout the project site. This species was not observed during field surveys. Nearest known occurrence is approximately 6.3 miles to the southwest of the project site.
Western bumble bee (*Bombus occidentalis*)	State List: SC-E Global Rank: G3 State Rank: S1	Forests, meadows, and coastal scrub.	**Not Likely to Occur.** The project site is outside of the known elevation range for the species. Nearest known historical occurrence is approximately 3.9 miles to the southwest of the project site.
Conservancy fairy shrimp *(Branchinecta conservatio*	Federal List: FE Global Rank: G2 State Rank: S2	Large vernal pools and seasonal wetlands.	**Not Likely to Occur.** No vernal pool habitat present within the project site. Nearest known occurrence is approximately 5.2 miles to the southeast of the project site.
Vernal pool fairy shrimp (*Branchinecta lynchi*)	Federal List: FT Global Rank: G3 State Rank: S3	Valley and foothill grassland, vernal pool, wetland.	**Not Likely to Occur.** No vernal pool habitat present within the project site. Nearest known historical occurrence from 1993 is approximately 1-mile to the west of the project site.
Monarch butterfly (*Danaus plexippus*)	Federal list: FP-T Global Rank: G4T1T2Q State Rank: S2	Overwinter in groves of trees scattered from Mendocino County south to Baja California; start to migrate inland in the	**Low.** There is a low potential this species could forage and migrate through the project site. No monarch butterflies or milkweed plants were

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
		spring feeding on flower nectar, mating and laying eggs on a variety of milkweed (*Asclepias* spp.) plants, the sole source of food for caterpillars.	observed during field surveys. No known occurrence have been documented within 10 miles of the project site.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	Federal List: FT Global Rank: G3T3 State Rank: S3	Riparian and associated upland habitat. Dependent upon host plant, elderberry shrub (*Sambucus* sp.).	**Not Likely to Occur.** Host plant is not present within the project site. Nearest known occurrence is approximately 5.9 miles to the southwest of the project site.
Delta green ground beetle *Elaphrus viridis*	Federal List: FT Global Rank: G1 State Rank: S1	Large vernal pools, playa pools.	**Not Likely to Occur.** No vernal pool habitat present within the project site. Nearest known occurrence is approximately 7.9 miles to the southeast of the project site.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	Federal List: FE Global Rank: G3 State Rank: S3	Vernal pools and ephemeral stock ponds.	**Not Likely to Occur.** No vernal pool habitat present within the project site. Nearest known occurrence is approximately 3.8 miles to the southwest of the project site.
Reptiles and Amphibians			
California tiger salamander (*Ambystoma californiense*)	Federal List: FT State List: ST Global Rank: G2G3T3 State Rank: S3 CDFW: WL	Cismontane woodland, Meadow and seep, riparian woodland, Valley and foothill grassland, Vernal pool, Wetland.	**Not Likely to Occur.** The seasonal aquatic features within the project site do not hold water long enough to support this species, and Gibson Canyon Creek is intermittent and lacks the persistent pools required for breeding. The project site is highly disturbed by human activity as it is predominantly active agriculture. Nearest known occurrence is approximately 5.6 miles to the southwest of the project site. Designated critical habitat for the species occurs 8.6 miles to the southeast of the project site.
Northwestern pond turtle (*Actinemys marmorata*)	Federal List: FP-T Global Rank: G2 State Rank: SNR CDFW: SSC	Aquatic, Artificial flowing waters, Klamath/North coast flowing waters, Klamath/North coast standing waters, Marsh and swamp, Sacramento/San Joaquin flowing waters, Sacramento/San Joaquin	**Low.** Gibson Canyon Creek is the only suitable aquatic habitat near the project site; however, the creek is intermittent, lacks persistent pools, and is surrounded by mostly compacted and frequently disturbed uplands. Nearest known occurrence is

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
		standing waters, South coast flowing waters, South coast standing waters, Wetland.	approximately 1.6 miles to the southwest of the project site.
Foothill yellow-legged frog - central coast DPS (*Rana boylii* pop. 4)	Federal List: T Stale List: E Global Rank: G3T2 State Rank: S2 CDFW: SSC	Aquatic, Chaparral, Cismontane woodland, Coastal scrub, Klamath/North coast flowing waters, Lower montane coniferous forest, Meadow and seep, riparian forest, riparian woodland, Sacramento/San Joaquin flowing waters.	**Not Likely to Occur.** No suitable rocky-substrate stream habitat and the seasonal aquatic features on site do not hold water long enough to support this species. Nearest known historical occurrence from 1912 is approximately 3.4 miles south of the project site.
Western spadefoot (*Spea hammondii*)	Federal List: FP-T Global Rank: G2G3 State Rank: S3S4 CDFW: SSC	Cismontane woodland, Coastal scrub, Valley and foothill grassland, Vernal pool, Wetland – requires sandy/gravely soils.	**Not Likely to Occur.** Marginally suitable grassland habitat is present; however, no vernal pool or seasonals pond habitat is present. Seasonal aquatic features on site do not hold water long enough to support this species. No known occurrences have been recorded within 10 miles of the project site.
Giant garter snake (*Thamnophis gigas*)	Federal List: FT State List: ST Global Rank: G2 State Rank: S2	Prefers freshwater marsh and low gradient streams. Adapted to drainage canals and irrigation ditches.	**Not Likely to Occur.** Gibson Canyon Creek is the only suitable aquatic habitat; however, it is an intermittent stream that does not provide emergent vegetation preferred by the species. Nearest known occurrence is approximately 8.5 miles to the southeast of the project site.
Birds			
Tricolored blackbird (*Agelaius tricolor*)	State List: ST Global Rank: G1G2 State Rank: S2 CDFW: SSC	Yearlong resident that makes extensive migrations and movements within their range in California; colonial breeding occurs near fresh water, preferably wetlands with tall cattails or tules, but also in thickets of willow, blackberry, wild rose, and tall herbs; often congregate in huge, mixed-species blackbird flocks that forage in grasslands and agricultural fields with	**Not Likely to Occur.** Suitable habitat is absent for this species. Tricolored Blackbird Portal queried no known colonies in the project study area. Nearest known occurrence is approximately 5.4 miles to the southwest of the project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
		low-growing vegetation during the winter.	
Grasshopper sparrow (*Ammodramus savannarum*)	Global Rank: G5 State Rank: S3 CDFW: SSC	Occurs in California primarily as a summer resident from March to September; partly migratory with rare winter occurrences; prefer short to middle-height, moderately open grasslands with scattered shrubs.	**Low.** Marginal habitat is present for this species. Nearest known occurrence is approximately 5.6 miles to the southeast of the project site.
Mountain plover (*Anarhynchus montanus*)	Global Rank: G3 State Rank: S2 CDFW: SSC	Winter visitor in short-grass agricultural fields, heavily grazed rangeland, and disturbed open ground.	**Not Likely to Occur.** Suitable habitat is absent for this species. Nearest known occurrence is approximately 8.3 miles to the southeast of the project site.
Golden eagle (*Aquila chyrsaetos*)	Federal: BCC Global Rank: G5 State Rank: S3 CDFW: FP	Yearlong resident and migrant throughout California except center of Central Valley; nests and winters in hilly, open, or semi-open areas including shrublands, grasslands, pastures, riparian areas, mountain canyons, and open desert, constructing nests in trees and cliffs in open areas; forages in open habitats including grasslands, shrublands and desert areas. Known to nest in trees and on transmission lines.	**Moderate.** Marginal foraging and nesting habitat is present within the project site. Nearest known occurrence is approximately 3.5 miles to the south of the project site.
Great egret (*Ardea alba*)	Global Rank: G5 State Rank: S5	Widespread throughout California's lowlands near wetland complexes, rice fields, marshes and riparian corridors. Prefers freshwater and brackish wetlands. Nests colonially in tall trees near water.	**Moderate.** Nearest known occurrence documented in eBird is approximately 2 miles to the west of the project site. Nearest known rookery is approximately 9.6 miles southeast of the project site.
Burrowing owl (*Athene cunicularia*)	State List: SC-E Global Rank: G4 State Rank: S2	Coastal prairie, Coastal scrub, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, Sonoran desert scrub, Valley and foothill grassland.	**High.** This species is known to occur within the project study area, although no burrowing owls were observed within the project site during protocol-level surveys. One individual was incidentally observed in 2023 approximately 0.5

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
			miles northeast of the project site during Swainson's hawk surveys. No burrowing owls were observed during 2024 or 2025 focused surveys. Nearest known occurrence is approximately 0.7 miles to the northeast of the project site.
Swainson's hawk (*Buteo swainsoni*)	State List: ST Global Rank: G5 State Rank: S4	Nests peripheral to riparian systems or in lone trees in agricultural fields or pastures and roadside trees when available and adjacent to suitable foraging habitat; forages in adjacent grasslands or suitable grain or alfalfa fields.	**Present (nesting and foraging).** This species was observed during field surveys. Two pairs of Swainson's hawk were observed with active nests within a 0.5-mile radius of the project site and gen-tie corridor near the PG&E Vaca-Dixon Substation. Suitable foraging and nesting habitat is present within the project site.
Northern harrier (*Circus hudsonius*)	Global Rank: G5 State Rank: S3 CDFW: SSC USFWS: BCC	Yearlong resident within its breeding range in California; breed and forage in a variety of open (treeless) habitats that provide vegetative cover, including annual and perennial grasslands, weed fields, agricultural fields, sagebrush flats, and desert sinks, among others.	**Moderate (foraging).** Suitable foraging habitat is present within the project site. No nesting habitat is present as the site lacks wetland vegetation and does not have tall, dense grasslands or marshes. No Northern harriers were observed during field surveys. The nearest known occurrence is approximately 2 miles to the west of the project site.
Western yellow billed cuckoo (*Coccyzus americanus occidentalis*)	Federal: FT State List: SE Global Rank: G5T2T3 State Rank: S1	Deciduous riparian thickets or forests with dense, low-level or understory foliage, near slow-moving water, backwaters or seeps. Nests in sites with willows, dense low-level or understory foliage, high humidity, and wooded foraging spaces.	**Not Likely to Occur.** No riparian forest habitat is present within the project site. No known occurrences have been recorded within 10 miles of the project site.
White-tailed kite (*Elanus luecurus*)	Global Rank: G5 State Rank: S3S4 CDFW: FP	Cismontane woodland, Marsh and swamp, riparian woodland, Valley and foothill grassland, Wetland.	**Present.** This species was observed during field surveys. Suitable foraging habitat within drainages, grassland and agricultural areas are present. Large trees suitable for nesting are present within the project study area.
Prairie falcon (*Falco mexicanus*)	Global Rank: G5 State Rank: S4	Uncommon yearlong resident from southeastern deserts northwest	**Moderate (foraging).** This species may be present as winter residents within grassland and

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
	CDFW: WL	throughout the Central Valley and along the inner Coast Ranges and Sierra Nevada; typically nests in a scrape on a sheltered ledge of a cliff overlooking large, open areas; forages in perennial grasslands, savannahs, rangelands, agricultural fields, and desert scrub.	agricultural fields within the project site. This species was not observed during field surveys. Suitable nesting habitat is not present. Nearest known reported occurrence is approximately 1.72 miles to the northwest of the project site.
American peregrine falcon (*Falco peregrinus anatum*)	Federal List: D State List: D Global Rank: G4T4 State Rank: S3S4	Widespread in California during winter, breeds in the coast of southern and central California, inland northern coastal mountains, Klamath Mountains, Cascade Range, and Sierra Nevada.	**Low.** Marginally suitable man-made structures and some aquatic habitat is present within the project site; however, this species is only likely to transient the area if at all. The nearest known historical occurrence from 1999 is approximately 8 miles to the northwest of the project site. This species was not observed during surveys.
Saltmarsh common yellowthroat (*Geothlypis trichas sinuosa*)	Global Rank: G5T3 State Rank: S3 CDFW: SSC USFWS: BCC	Resident of the San Francisco Bay region where it occurs in fresh and saltwater marshes and swamps. Requires dense, contiguous cover to water's edge for foraging. Requires tall grasses, tules or willows for nesting.	**Not Likely to Occur.** Suitable habitat is absent for this species.
Bald eagle (*Haliaeetus leucocephalus*)	Federal List: D State List: SE Global Rank: G5 State Rank: S3 CDFW: FP	Yearlong resident in northern California and scattered locations in central and southern Sierra Nevada Mountains and foothills, central coast range to inland southern California; uncommon to common winter migrant in southern California; nests in large, old-growth forests; requires large bodies of permanent water nearby for nesting and foraging.	**Low (foraging).** This species may be present as winter residents within grassland and agricultural fields within the project site. This species was not observed during field surveys. Suitable nesting habitat is not present. Nearest known reported occurrence is approximately 2.4 miles to the northwest of the project site.
Yellow-breasted chat (*Icteria virens*)	Global Rank: G5 State Rank: S4 CDFW: SSC	Associated with shrubby willow riparian habitat with an open canopy and dense sub-canopy.	**Not Likely to Occur.** No riparian thicket habitat are present within the project site. Nearest known historical occurrence from 1987 is approximately 8.4 miles to the northwest of the project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
Loggerhead shrike (*Lanius ludovicianus*)	Global Rank: G4 State Rank: S4 CDFW: SSC	Open agricultural landscapes, grasslands, pastures, and rural edges.	**High.** Suitable foraging habitat is present within the project site. This species was not observed during field surveys.
California black rail (*Laterallus jamaicensis coturniculus*)	State List: T Global Rank: G3T1 State Rank: S2 CDFW: FP	Nests and forages in saline, freshwater, or brackish emergent marshes with gently grading slopes and upland refugia with vegetative cover beyond the high-water line.	**Not Likely to Occur.** Suitable habitat is absent for this species. No known occurrences have been recorded within 10 miles of the project site.
Black-crowned night heron (*Nycticorax nycticorax*)	Global Rank: G5 State Rank: S4	Widespread throughout California. Regularly occurs in Solano County, especially near wetlands, ponds, agricultural drainages, and riparian corridors. Breeds colonially in trees or dense vegetation near water.	**Low (foraging).** Limited foraging habitat is present in seasonal wetlands and intermittent drainages when ponded, but they do not support the hydrology or vegetation required for nesting. This species was observed as a flyover approximately 1.45 miles to the northwest of the project site.
Mammals			
Pallid bat (*Antrozous pallidus*)	Global Rank: G4 State Rank S3 CDFW: SSC WBWG: High	Roosting sites can include caves, rock crevices, mines, hollow trees, buildings; favors rocky outcrops and desert habitats.	**Not Likely to Occur.** No suitable deserts, shrublands, woodlands, forests or roosting habitat is present within the project site. No known occurrences have been recorded within 10 miles of the project site.
Townsend's big-eared bat (*Corynorhinus townsendii*)	Global Rank: G4 State Rank: S2 CDFW: SSC WBWG: High	Found throughout California but details of distribution not well known; requires caves, mines, tunnels, buildings, or other human-made structures for roosting; forages by gleaning from brush or trees or feeds along habitat edges.	**Not Likely to Occur.** Suitable habitat is absent for this species. No known occurrences have been recorded within 10 miles of the project site.
Western red bat (*Lasiurus blossevillii*)	Global Rank: G4 State Rank: S3 CDFW: SSC	Riparian and wooded habitats; occurs at least seasonally in urban areas; day roosts within foliage of trees; found in fruit orchards and sycamore riparian habitats in the Central Valley.	**Moderate.** Orchards may provide suitable roosting habitat. Nearest known occurrence is approximately 8.7 miles to the northwest of the project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
Suisun shrew *Sorex ornatus sinuosus*)	Global Rank: G5T1T2Q State Rank: S1S2 CDFW: SSC	Salt and brackish marshes with low dense vegetation.	**Not Likely to Occur.** No suitable tidal marsh habitat is present. No known occurrences have been recorded within 10 miles of the project site.
American badger (*Taxidea taxus*)	Global Rank: G5 State Rank: S3 CDFW: SSC	Uncommon permanent resident found throughout most of California except along northern coast; most abundant in drier open stages of most shrub, forest, and herbaceous habitats; require friable soils for burrowing.	**High.** Suitable habitat is present within the project site. This species was not observed during field surveys. The nearest known occurrence is approximately 3.1 miles to the southwest of the project site.
Fish			
Green sturgeon – southern DPS (Acipenser *medirostris*) pop. 1	Federal List: FT Global Rank: G2T1 State Rank: S1 CDFW: SSC	Aquatic, Klamath/North coast flowing waters, Sacramento/San Joaquin flowing waters.	**Not Likely to Occur.** No suitable habitat present within the project site. Nearest known occurrence is approximately 9.8 miles to the southeast of the project site.

[1]FEDERAL STATUS DESIGNATIONS

ESA (Federal Endangered Species Act):

FT = Federally threatened
FP-T = Federally proposed as threatened
FE = Federally endangered

USFWS (U.S. Fish and Wildlife Service):

BGEPA = Bald and Golden Eagle Protection Act
BCC = Bird of Conservation Concern

STATE STATUS DESIGNATIONS

CESA (California Endangered Species Act):

ST = State threatened
SE = State endangered
SC-E = State candidate for listing as endangered
SC-T = State candidate for listing as threatened

CDFW (California Department of Fish and Wildlife)

FP = Fully Protected species
SSC = Species of Special Concern
Title 14 = Title 14 species
WL = Watch List species

[2]POTENTIAL TO OCCUR DEFINITIONS:

The definitions provided below are general parameters used to establish a baseline potential for each species to occur. These may be slightly altered due to survey results, professional experience, and/or coordination with the applicable resource agencies.

Present: Observed within or near project site during surveys.

High: Suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project site.

Moderate: Suitable habitat is present; project site is within known geographic and elevation ranges of species; and recent (within 10 years) record(s) located within 10 miles of project site OR typically suitable habitat is present; project site is within geographic and elevation ranges of species; and somewhat recent (within 20 years) record(s) located within 10 miles of project site.

Low: Typically or occasionally suitable habitat is present; project site is outside of known geographic and/or elevation ranges; and recent (within 10 years) record(s) located within 10 miles of project site OR typically or occasionally suitable habitat is present; project site is within known geographic and elevation ranges; and recent (within 10 years) or somewhat recent (within 20 years) located within 10 miles of project site.

TABLE 5.2-5 KNOWN AND POTENTIAL OCCURRENCE OF SPECIAL-STATUS WILDLIFE WITHIN THE PROJECT AREA

Common Name Scientific Name	Status[1]	Range and Habitat	Potential to Occur[2] and Comments
NatureServe Global / State Ranks: (G/S) 1 = Critically imperiled; at very high risk of extinction or elimination due to very restricted range, very few populations or occurrences, very steep declines, very severe threats, or other factors (G/S) 2 = Imperiled; at high risk of extinction or elimination due to restricted range, few populations or occurrences, steep declines, severe threats, or other factors (G/S) 3 = Vulnerable; at moderate risk of extinction or elimination due to fairly restricted range, relatively few populations or occurrences, recent and widespread declines, threats, or other factors (G/S) 4 = Apparently secure; at fairly low risk of extinction or elimination due to an extensive range and/or many populations or occurrences, but with possible cause for some concern as a result of recent local declines, threats, or other factors (G/S) 5 = Secure; at very low risk of extinction or elimination due to a very extensive range, abundant populations or occurrences, and little to no concern from declines or threats SNR = State not ranked T = Subspecies/varieties receive a "T" rank attached to the "G" rank. With subspecies/varieties, the "G" rank reflects the condition of the entire species, whereas the "T" rank reflects the global situation of just the subspecies or variety.			**Not Likely To Occur:** Typical or occasionally suitable habitat is not present and/or the project site is outside of the known geographic and/or elevation ranges of the species; no known records located within 10 miles of project site. **OTHER** WBWG = Western Bat Working Group **Sources:** CDFW 2026a, TT 2024b, NatureServe 2026, eBird 2026, iNaturalist 2026, USFWS 2026a

Special-Status Invertebrates

Crotch's bumble bee (*Bombus crotchii*). Crotch's bumble bee is currently designated as a candidate species for listing under the CESA. As a candidate species, it receives the same protection as if it were listed as threatened or endangered until the California Fish and Game Commission makes a final determination on its status.

Once widespread in California's Central Valley, this species is now absent from much of its historic range. There has been a decline of 67.51 percent (based on extent of occurrence, persistence, and relative abundance) over the past decade (Hatfield et al. 2015). Ongoing threats to the species include habitat conversion, pesticide use, disease from managed bees, and other factors such as invasive species. Due to factors such as habitat loss, extensive agricultural activities, and use of pesticides in the Central Valley, this species now appears to be absent from most of its historic range (Hatfield et al. 2015).

Crotch's bumble bee inhabits diverse environments, including grasslands, shrublands, chaparral, desert margins, and semi-urban areas. As generalists, they utilize a wide range of plants for nectar, including *Antirrhinum*, *Asclepias, Chaenactis*, *Clarkia*, *Dendromecon*, *Eschscholzia*, *Eriogonum*, *Lupinus*, *Medicago*, *Phacelia*, *Salvia* (Williams et al. 2014). This species nests in underground abandoned rodent nests, tufts of grass, old bird nests, rock piles, or cavities of dead trees.

The nearest documented occurrence is approximately 6.3 miles to the southwest of the project site. In addition, iNaturalist has a record of eight "research grade" occurrences within Solano County from 2022 through 2026 (iNaturalist 2026). Crotch's bumble bee requires diverse floral habitats throughout its life cycles to thrive.

The project study area is dominated by agricultural and developed lands that lack essential plants like milkweed, lupine, phacelia, and sage, which are critical for the species. This limited floristic diversity, combined with ongoing disturbances related to agriculture, reduces the chances of successful nesting and overwintering for the species (Hatfield et al. 2018). The project site falls within the species' known range and contains features such as small mammal burrows that could provide nesting habitat and include non-native floristic resources known to be used for foraging. No bumble bee species were incidentally detected during field surveys; however, no protocol-level surveys for this species were conducted. Therefore, there is a moderate potential for the species to occur within and adjacent to the project site.

Monarch butterfly (*Danaus plexippus*). The monarch butterfly was proposed for listing as threatened under the federal ESA in December 2024. Until a final ruling, expected in late 2026, this species is not afforded protection under the federal Endangered Species Act; however, CEC staff has addressed this species in anticipation of a final listing decision.

Adult monarch butterflies are large and conspicuous, with bright orange wings surrounded by a black border and covered with black veins. North American migratory monarch butterflies are divided into eastern and western populations with the Rocky Mountains generally separating the two. The North American western population is generally found west of the Rocky Mountains and can migrate annually up to 300 to 1,000 miles (500 to 1,600 kilometers). There are also non-migratory monarchs that remain year-round at the southern end of their breeding range in parts of Florida, the Gulf Coast, and California. The primary threats affecting the health of North American migratory monarch butterfly populations include the loss and degradation of breeding, migratory, and overwintering habitat from past conversion of grasslands and shrublands to agriculture and urban development, exposure to herbicides and insecticides, and effects of climate change (Xerces 2016).

Each fall, monarch butterflies go into diapause, a suspended state of reproduction, and begin their long migration to overwintering sites which consist of hundreds of tree groves along the California coast down into northern Baja California. Flowering plants and milkweed plants are essential components in monarch butterfly habitat. Adult monarchs require the nectar from a variety of flowering plants while foraging during breeding and migration. Eggs are deposited on milkweed plants which are the sole resource that caterpillars consume. In early spring, surviving individuals break diapause and mate at the overwintering sites before dispersing northward through the breeding grounds. These individuals then die, leaving their offspring to repeat the cycle. Several generations later, the last adults produced in late summer/fall begin the southward overwintering migration.

There are no CNDDB occurrences of overwintering monarch butterflies within a 10-mile radius of the project site. The project site is outside the monarch's known overwintering range and does not contain suitable overwintering habitat (i.e., tree groves). No milkweed (a required host plant for larvae) plants were observed during the 2023 or 2024 field surveys and no monarch butterflies were observed during field surveys. Monarch butterflies are foraging generalists and may utilize available flowering plants in the vicinity of the project site. However, the project site lacks the floral diversity necessary to support the species. Therefore, the monarch butterfly has a low potential to occur within the project site.

Special-Status Fish

The project site does not support suitable habitat for special-status fish, and none are expected to occur.

Special-Status Amphibians

The project site does not support suitable habitat for special-status amphibians, and none are expected to occur.

Special-Status Reptiles

Northwestern pond turtle (*Actinemys marmorata*). The northwestern pond turtle is a federally proposed threatened species and a state species of special concern. It is closely tied to aquatic environments across California, west of the Sierra-Cascade crest, and is absent from most desert regions except along the Mojave River (Jennings and Hayes 1994). It thrives in permanent or nearly permanent water bodies such as ponds, lakes, slow-moving streams, irrigation ditches, and pools along intermittent streams, from sea level up to 4,690 feet (Jennings and Hayes 1994). These habitats must provide basking sites such as logs, rocks, mats of floating vegetation, or open mud banks where turtles regulate body temperature and escape quickly to underwater retreats when threatened (Stebbins 1972; Nussbaum et al. 1983). In colder climates, they typically hibernate in bottom mud, while in warmer areas, they may remain active year-round (Bury 1970; Bury 1972).

The species' reproductive needs further shape habitat uses. Females often travel overland, sometimes more than 300 feet, to locate suitable nesting sites with soil at least 10 cm deep and high humidity for egg development (Storer 1930; Nussbaum et al. 1983). Hatchlings are highly vulnerable to desiccation, making consistent moisture critical for survival (Jennings and Hayes 1994). Nests occur in varied substrates, from sandy banks near streams to upland fields (Storer 1930; Nussbaum et al. 1983). Eggs are laid from March to August, with incubation lasting 73 to 80 days under optimal conditions (Ernst and Barbour 1972; Feldman 1982). While home ranges are generally small, occasional movements occur in response to drying water sources (Bury 1970, 1972).

The nearest CNDDB occurrence is approximately 1.6 miles to the southwest of the project site (2016) where the species was documented within a flood control channel. While most of the aquatic areas within the project site offer poor habitat for northwestern pond turtles, Gibson Canyon Creek serves as potential habitat when it contains water; however, the banks of the creek are likely too steep for use by the species. The grasslands near the PG&E Vaca-Dixon Substation may support the species for nesting and movement between habitats. No northwestern pond turtles were detected during field surveys. Therefore, there is a low potential for the species to occur within and adjacent to the project site.

Special-Status Birds

Grasshopper sparrow (*Ammodramus savannarum*). The grasshopper sparrow is a state species of special concern and is protected under the MBTA. It is a small, secretive songbird of open grasslands, breeding across much of North America from southern Canada to the central and eastern United States, with disjunct populations extending south to parts of Mexico and Central America (Vickery 1996). In California, it is an uncommon and local summer resident and breeder in foothills and lowlands west of the Cascade-Sierra Nevada crest, from Mendocino and Trinity Counties south to San Diego County (Dobkin et al. 2008). It occupies dry, dense grasslands with a mix of

grasses and forbs and scattered shrubs for singing perches. Nests are constructed on the ground in a slight depression, concealed at the base of overhanging grasses or forbs.

The nearest known occurrence is approximately 5.6 miles to the southeast of the project site. Grassland and agricultural lands surrounding the project site may provide marginally suitable foraging or nesting habitat for this species. No grasshopper sparrows were observed during field surveys. Therefore, there is a low potential for this species to occur within the project site.

Golden eagle (*Aquila chrysaetos*). The golden eagle is protected by the federal MBTA and the BGEPA. This species is also protected by the CMBPA and applicable sections of the California Fish and Game Code and is designated a fully protected species and a species of special concern. Within California, the golden eagle is a year-round resident generally inhabiting mountainous and hilly terrain throughout open areas. The primary threats to golden eagle survival throughout its range include loss or alteration of both foraging and nesting habitat. Human disturbance of nesting birds and fatalities caused by contact with infrastructure (e.g., power facilities, buildings, fences, wind turbines) also pose threats to this species.

Golden eagle habitat in central California consists mainly of open grasslands and oak savanna interspersed with oak and shrub woodlands. The eagles in this area nest predominantly in large, mature oak (*Quercus* spp.) and eucalyptus (*Eucalyptus* spp.) trees (Peeters and Peeters 2005), utilizing nearby open areas for foraging mostly on ground squirrels (Hunt et al. 2017). California breeding populations are largely sedentary, occupying and defending territories year-round. Evidence collected to date suggests that relatively few northern migrants winter in California (Goodrich and Smith 2008; McIntyre et al. 2008), probably due in part to high densities of year-round residents in many areas of the state (Hunt 2002). Even in areas where established breeders are primarily sedentary, young birds may wander extensively (Kochert et al. 2020). Golden eagles exhibit high breeding site fidelity throughout their range. Evidence collected to date also suggests that migratory eagles, at least adults, tend to show high winter site fidelity as well.

Golden eagles are known to occur in Solano County mostly within the southern portion of the county and towards Travis Air Force Base, approximately 7.7 miles to the south of the project site. The annual grasslands and fallow fields near the project site may offer limited foraging grounds and small mammal prey for golden eagles.

The project site lacks suitable nesting structures like large trees or cliffs. Although nearby transmission towers could potentially serve as alternative nesting structures, frequent human activity, including traffic from I-80 and the proximity of local towns, would make nesting in these towers unlikely. No golden eagles were incidentally observed within the project site during surveys; however, protocol-level surveys for golden eagle were not conducted. Therefore, golden eagles have a moderate potential

to forage and a low potential to nest within and adjacent to the project site, with any occurrence likely limited to occasional flyovers and opportunistic foraging.

Western burrowing owl (*Athene cunicularia*). The western burrowing owl is a state species of special concern and is currently designated as a candidate species under the CESA. As a candidate species, it receives the same protection as if it were listed as threatened or endangered until the California Fish and Game Commission makes a final determination on its status. It is also protected under the federal MBTA and the California Migratory Bird Protection Act, and applicable sections of the California Fish and Game Code.

Burrowing owls are year-round residents throughout much of California occurring in open, dry grassland, and desert habitats and in forb and open shrub stages of pinyon juniper and ponderosa pine habitats. The breeding season is March to August but can begin as early as February and extend into December. Burrowing owls are unique among the North American owls in that they nest and roost in abandoned burrows, especially those created by California ground squirrels, and other wildlife. Burrowing owls have a strong fidelity for previously occupied nesting and wintering habitats and often return to burrows used in previous years, especially if they were successful at reproducing there in previous years (Gervais et al. 2008). Threats to burrowing owl include habitat loss, predation, roadkill, reduced burrow availability due to rodent control, and pesticides.

Solano County is situated within the known geographic range of the species. Based on review of records in the CNDDB, there are 88 documented occurrences of the species within a 10-mile radius of the project site, the closest being approximately 0.7-mile to the northeast. The applicant conducted focused surveys between December 2024 and November 2025, which yielded no detections within the immediate survey area for the project site. However, an incidental observation of one owl was recorded in 2023 roughly 0.5-mile to the northeast of the project site during separate Swainson's hawk surveys.

Suitable foraging and movement habitat for western burrowing owl occurs within the project site; however, suitable nesting or overwintering habitat is limited due to the absence of ground squirrel burrow systems or other burrow surrogates. Habitat features that support nesting and roosting, such as ground squirrel burrows, elevated banks, and debris piles (concrete pipes), occur in the project site, particularly near the PG&E Vaca-Dixon Substation. No burrowing owls were observed during protocol-level surveys conducted in 2024 or 2025. However, the proximity to known occurrences and the presence of suitable habitat in the surrounding areas indicate a high potential for this species to occur within or near the project site.

Swainson's hawk (*Buteo swainsoni*). Swainson's hawk is listed as a state threatened species and is also protected under the MBTA. The species requires large areas of open landscape for foraging such as grasslands and agricultural lands that

provide low-growing vegetation for hunting and high rodent prey populations such as ground squirrels, gophers, mice, voles, and rabbits. They may also eat bats, snakes, lizards, and birds. This species typically nests in large solitary trees or in a small grove of trees such as valley oak (*Quercus lobata*), cottonwood (*Populus fremontii*), walnut (*Juglans hindsii*), and willow (*Salix* spp.), and occasionally in non-native trees, such as eucalyptus (*Eucalyptus* spp.). These nests are found within riparian woodlands, along roadsides, in trees along field borders, isolated trees, small groves, and on the edges of remnant oak woodlands. Currently, the most significant threat to the remaining Swainson's hawk population in California is habitat loss due to residential and commercial development (CDFW 2016).

The Central Valley serves as a primary range for the Swainson's hawk, with peak nesting densities concentrated in Solano, Yolo, Sacramento, and San Joaquin Counties. The CNDDB has approximately 200 recorded occurrences within 10 miles of the project site (CDFW 2026a). Agricultural lands within and adjacent to the project site offer high-quality foraging opportunities for Swainson's hawk, while the presence of scattered mature trees and transmission towers provide necessary nesting habitat.

Protocol-level surveys conducted between March and June 2023 identified two active nests within a 0.5-mile radius of the project site and gen-tie corridor. One was located west of the I-80/N. Meridian Road onramp near the PG&E Vaca-Dixon Substation, and the other was located east of N. Meridian Road. A third pair was observed exhibiting nesting behavior in a eucalyptus stand approximately 0.7 miles south on Byrnes Road. Surveys conducted subsequently in 2024 confirmed the continued use of the nesting site located west of the I-80/N. Meridian Road onramp. Because Swainson's hawks exhibit strong site fidelity and often reuse the same nests each year, their continued presence in the area is likely. Therefore, there is a high potential for this species to be present within the project site.

Bald eagle (*Haliaeetus leucocephalus*). Bald eagle is a state-listed endangered species afforded protection under the MBTA, the BGEPA, the California Migratory Bird Protection Act, and the California Fish and Game Code. The bald eagle is a year-round resident and occasional winter visitor (Zeiner et al. 1990). The species requires mature trees for nesting, typically located within 1.25 miles of aquatic foraging habitats such as lakes or rivers. In winter, they remain near open water. Additionally, nesting pairs generally maintain a distance of at least 1,640 feet from human development to ensure successful breeding (Buehler 2000).

There is one CNDDB occurrence within a 10-mile radius, located approximately 9.25 miles southwest of the project site. The project site lacks open water and specific nesting habitat required by bald eagles (*Haliaeetus leucocephalus*). The species is only anticipated to occur as a rare transient flying over the site. Therefore, there is a low potential for the bald eagle to be present within the project site.

Northern harrier (*Circus cyaneus*). Northern harriers are designated as a state species of special concern. This species is found in a range of habitats with low vegetation, including deserts, coastal sand dunes, pasturelands, croplands, dry plains, grasslands, old fields, estuaries, open floodplains, and marshes. This species feeds mostly on voles, small mammals, birds, frogs, small reptiles, crustaceans, insects, and rarely on fish. During the breeding season they are most commonly found in large undisturbed tracts of wetlands and grasslands with low, thick vegetation where they nest on the ground and is usually a dense clump of vegetation such as willows, grasses, sedges, reeds, bulrushes, and cattails.

Northern harriers are known to occur year-round in this region. There are two CNDDB occurrences within a 10-mile radius of the project site. The nearest known occurrence is approximately 4.5 miles to the south of the project site. There is suitable foraging habitat present within the agricultural lands found within the project site; however, due to routine agricultural operations, suitable nesting habitat within the project site remains limited. This species was not observed during field surveys. Therefore, northern harrier has a moderate potential to occur within the project site.

Prairie falcon (*Falco mexicanus*). The prairie falcon is designated as a state watch list species. This species lives in dry areas of western North America, from southern Canada to central Mexico, favoring open habitats like grasslands, savannahs, rangelands, and desert scrub up to 11,000 feet. Breeding birds sometimes forage in agricultural fields. They require cliffs or bluffs for nesting though they could sometimes nest in trees, on power line structures, on buildings, or inside caves or stone quarries. Prairie falcons primarily feed on ground squirrels, pikas, and horned larks but also hunt lizards, small birds, rodents, and insects.

Prairie falcons are known to occur within Solano County. Although no prairie falcon occurrences are documented in the CNDDB within a 10-mile radius of the project site, eBird records include several observations within this radius, with the nearest detection approximately 1.72 miles northwest of the project site. There is suitable foraging habitat present within the agricultural lands found within the project site. This species was not observed during field surveys. Therefore, prairie falcons have a moderate potential to occur within the project site.

American peregrine falcon (*Falco peregrinus anatum*). The American peregrine falcon is a fully recovered raptor species that was formerly listed as endangered under both the federal ESA and the CESA. The species was delisted federally in 1999 and delisted in California in 2009 following successful recovery efforts. Although no longer state- or federally listed, peregrine falcons remain protected under the MBTA, and California Fish and Game Code and are recognized as a USFWS BCC due to ongoing sensitivity to disturbance at nest sites.

Peregrine falcons occur year-round in California, with highest densities near coastal cliffs, major river corridors, bridges, transmission towers, and tall buildings that provide

elevated nesting substrates. They forage over a wide range of open habitats, including grasslands, agricultural fields, wetlands, and urban areas, typically hunting medium-sized birds in flight. Nesting typically occurs on cliff ledges, tall structures, or occasionally large trees with open views.

The project site provides suitable foraging habitat but lacks suitable nesting substrates. The project study area consists of open annual grassland, agricultural fields, and linear water features (e.g., SID canal, Gibson Canyon Creek), all of which can support avian prey species. While cliffs or tall buildings are absent from the project site, transmission towers along the I-80 corridor and bridge structures in the broader region could provide nesting habitat.

Peregrine falcons are regularly observed throughout Solano County, particularly near major transportation corridors and open agricultural areas. The nearest known occurrences include observations along the I-80 corridor, Putah Creek, and the lower Sacramento River region, generally 5 to 12 miles from the project site. Due to the absence of suitable nesting substrates, the species is not expected to nest within or immediately adjacent to the project site; however, given the availability of open foraging habitat and the species' wide hunting range, there is a moderate potential for the species to forage within the project site.

White-tailed kite (*Elanus leucurus*). White-tailed kite is a state fully protected species. It commonly inhabits savannas, open woodlands, marshes, grasslands, partially cleared lands, and cultivated fields. This species is a yearlong resident in coastal and valley lowlands, especially in agricultural areas. White-tailed kite typically nests near the tops of oak, willow, or other tree stands that are located near open foraging areas. As common year-round residents of California's inland valleys and coastal regions, these raptors are frequently found in open grassland and agricultural landscapes that offer ample prey.

The project site contains suitable habitat for both nesting and foraging. During the 2023 raptor surveys, white-tailed kites were observed perching and foraging in the 0.5-mile survey buffer. Foraging habitat is supported by remnant grasslands and fallow agricultural fields, while patches of ruderal woodland along the I-80 corridor provide potential nesting habitat. Furthermore, the CNDDB documents five historical nest records within a 10-mile radius of the project site, with the most recent occurrence reported in 2016. Therefore, there is a high potential for this species to be present within the project site.

Special-Status Mammals

Western red bat (*Lasiurus blosseevillii*). The western red bat is a state species of special concern. The species prefers riparian habitat near water such as edge habitats of forests, rivers, fields, and urban areas and is also known to occur in fruit and nut orchards, particularly in the Central Valley. They primarily roost alone in trees; however they can sometimes roost in small clusters of individuals. Western red bats prefer to

roost in sycamore, cottonwood, velvet ash, and elder trees, and in leaf litter in the winter, and their coloring helps them blend among the leaves and branches (BCI 2026). Due to extensive loss of natural riparian forests in this region, western red bats have likely adapted to using fruit and nut orchards as alternative roosting habitats (Pierson et al. 2006). There is one CNDDB record within a 10-mile radius, located approximately 8.7 miles to the northwest of the project site.

This species may forage and roost in agricultural areas, specifically orchards within the gen-tie line and is known to inhabit eucalyptus trees for day roosts (Pierson et al. 2006). Therefore, there is a moderate potential for this species to occur within the project site.

American badger (*Taxidea taxus*). The American badger, a state species of special concern, was once widespread throughout open grassland habitats of California. This species is now an uncommon permanent resident with a wide distribution across California, except in the North Coast area.

American badgers inhabit burrows and often predate and forage on other small mammal burrows as evidenced by claw marks along the edges of existing burrows. This species is most abundant in the drier open stages of most shrub, forest, and herbaceous habitats with friable soils. It prefers habitats such as cropland, desert, grassland, savanna, and shrubland/chaparral. This species is generally associated with treeless regions, prairies, parklands, and cold desert areas (CDFW 2026a). American badger feeds mainly on various species of small mammals and captures some of its prey above ground foraging on birds, eggs, reptiles, invertebrates, and carrion.

The nearest CNDDB occurrence is approximately 3.1 miles to the southwest of the project site. There is suitable dry open grassland present with evidence of friable soils. No badgers or their sign were observed during focused burrow surveys. Based on the presence of suitable habitat American badger has a high potential to occur within and adjacent to the project site.

Regulatory

Federal

Endangered Species Act (16 U.S.C. § 1531 et seq., and 50 C.F.R., part 17.1, et seq.). The federal ESA designates and provides for protection of threatened and endangered plant and animal species, and their critical habitat. Its purpose is to protect and recover imperiled species and the ecosystems on which they depend. It is administered by the USFWS and the NMFS (also known as NOAA Fisheries, within the National Oceanic and Atmospheric Administration). The USFWS is responsible for terrestrial and freshwater organisms while NMFS is responsible for marine wildlife. Species may be listed as endangered or threatened. All species of plants and animals, except pest insects, are eligible for listing. Species are defined to include subspecies, varieties, and for vertebrates, distinct population segments. The ESA protects

endangered and threatened species and their habitats by prohibiting the "take" of listed animals and the interstate or international trade in listed plants and animals, including their parts and products, except under a federal permit. "Take" is broadly defined in the ESA to include "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct" (16 U.S.C., § 1532 [19]). Take can also include significant habitat modification or degradation that directly results in death or injury to a listed wildlife species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering (50 C.F.R., § 17.3). Take of federally listed species as defined in the ESA is prohibited without incidental take authorization, which may be obtained through Section 7 consultation (between federal agencies) or a Section 10 Habitat Conservation Plan. The administering agencies are USFWS and NMFS.

Bald and Golden Eagle Protection Act (16 U.S.C., §§ 668–668c). The Bald and Golden Eagle Protection Act, prohibits the "taking" of bald and golden eagles, including their parts, nests, or eggs. "Take" is defined as to "pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, destroy, molest, or disturb" any bald or golden eagle, whether "alive or dead...unless authorized by permit" (16 U.S.C., § 668(a)). The USFWS has authority and responsibility for enforcing the BGEPA.

Migratory Bird Treaty Act (16 U.S.C., §§ 703–711). The Migratory Bird Treaty Act makes it illegal to take, possess, import, export, transport, sell, purchase, barter, or offer for sale, any migratory bird or other parts, nests, or eggs of such a bird except under the terms of a valid federal permit. The USFWS has authority and responsibility for enforcing the MBTA.

Clean Water Act Sections 401 and 404 (33 U.S.C., §§ 1251–1376). The Clean Water Act requires the permitting and monitoring of all discharges to surface water bodies. Section 404 (33 U.S.C., § 1344) requires a permit from the U.S. Army Corps of Engineers (USACE) for a discharge of dredged or fill materials into a water of the United States, including wetlands. Section 401 (33 U.S.C., § 1341) requires a permit from the Regional Water Quality Control Board (RWQCB) for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity would not violate state and federal water quality standards.

State

California Endangered Species Act (Fish and G. Code, §§ 2050–2098). The California Endangered Species Act of 1984 states that all native species of plants, invertebrates, fish, amphibians, reptiles, birds, and mammals, and their habitats, threatened with extinction and those experiencing a significant decline which, if not halted, would lead to a threatened or endangered designation, will be protected and preserved. CESA prohibits the take of any species of wildlife designated by the California Fish and Game Commission as endangered, threatened, or candidate species.

The CDFW may authorize the take of any such species if certain conditions are met. These criteria are listed in Title 14 of the California Code of Regulations, Section 783.4, subdivisions (a) and (b). For purposes of CESA, "take" means to hunt, pursue, catch, capture, or kill (California Fish and G. Code, § 86). For projects under the exclusive jurisdiction of the CEC, or projects that elect to opt in to the CEC's jurisdiction under AB 205, incidental take authorization may be granted through the CEC's certification instead of ("in lieu of") a take permit issued by CDFW.

Fully Protected Species (Fish and G. Code, §§ 2081.15, 3511, 4700, 5050, and 5515). These sections designate certain species as fully protected and prohibit the take of such species or their habitat unless for scientific purposes (see also Cal. Code Regs., tit. 14, § 670.7). The incidental take of fully protected species may also be authorized in an approved natural community conservation plan (Fish and G. Code, § 2835) or by state legislation related to some renewable energy projects under Senate Bill (SB) 147.

SB No. 147, effective July 10, 2023, amends California Fish and Game Code, sections 3511, 4700, 5050, and 5515 and adds section 2081.15. This legislation allows CDFW to issue incidental take permits for fully protected species under specific and limited circumstances, including photovoltaic (PV) solar projects and related infrastructure. For projects under the exclusive jurisdiction of the CEC, or projects that elect to opt in to the CEC's jurisdiction under AB 205, incidental take authorization may be granted through the CEC's certification instead of ("in lieu of") a take permit issued by CDFW.

California Migratory Bird Protection Act (Fish and G. Code, § 3513). The California Migratory Bird Protection Act permanently prohibits the taking or possession of migratory birds, their nests, or eggs. It applies to all species listed under the federal Migratory Bird Treaty Act as of January 2, 2025, as well as any species added to the federal list after that date. A violation of this section of the California Fish and Game Code constitutes a crime. CDFW has authority and responsibility for enforcing the California Migratory Bird Protection Act.

Bird, Nest, and Eggs Protection. The following California Fish and Game Code sections designate protections for birds and/or their nests or eggs. The administering agency is CDFW.

- Section 3503: Makes it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto.
- Section 3503.5: Makes it unlawful to take, possess, or destroy any birds in the order Falconiformes and Strigiformes, or to take, possess, or destroy the nest or eggs of any such bird.
- Section 3800: All birds occurring naturally in California that are not resident game birds, migratory game birds, or fully protected birds, are nongame birds. This section makes it unlawful to take any nongame bird except as provided in this code or in

accordance with regulations of the commission or, when relating to mining operations, a mitigation plan approved by the department.

Furbearing and Mammal Protection. Regulations are in place protecting furbearing mammals as follows:

- California Fish and Game Code Section 251.1 prohibits the harassment of any furbearing mammal. Harass is defined as an intentional act that disrupts animals' normal behavior patterns, which includes, but is not limited to, breeding, feeding, or sheltering.
- California Code of Regulations, Title 14, Section 460 states that fisher, marten, river otter, desert kit fox, and red fox may not be taken at any time.

Native Plant Protection Act (Fish and G. Code, §§ 1900–1913). The Native Plant Protection Act (NPPA) was enacted in 1977 and directed the California Fish and Game Commission to carry out the Legislature's intent to "preserve, protect, and enhance rare and endangered plants in the State." The NPPA gave the Commission the power to designate native plants as "endangered" or "rare" and protect endangered and rare plants from take. The NPPA thus includes measures to preserve, protect, and enhance rare and endangered native plants.

CESA has largely superseded the NPPA for all plants designated as endangered by the NPPA. The NPPA nevertheless provides limitations on take of rare and endangered species as follows: "no person shall import into this state, or take, possess, or sell within this state" any rare or endangered native plant except in compliance with provisions of the CESA. Individual landowners are required to notify CDFW at least 10 days in advance of changing land uses to allow CDFW to salvage any rare or endangered native plant material.

California Lake and Streambed Alteration Notification/Agreement (Fish and G. Code, §§ 1602 et seq.). These sections stipulate that an entity shall not substantially divert or obstruct the natural flow of, or substantially change or use any material from, the bed, channel, or bank of any river, stream, or lake, or deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake. For projects under the exclusive jurisdiction of the CEC, or projects that elect to opt in to the CEC's jurisdiction under AB 205, the CEC has in-lieu permitting authority to issue the Lake and Streambed Alteration Agreement if project activities would result in impacts to CDFW jurisdictional streambeds and riparian habitats.

Porter-Cologne Water Quality Control Act (California Water Code Division 7). The State Water Resources Control Board (SWRCB) and the nine Regional Water Quality Control Boards have jurisdiction over all surface water and groundwater in California, including wetlands, headwaters, and riparian areas. For projects that elect to opt in to CEC jurisdiction under AB 205, CEC certification does not replace or supersede

the authority of the state or Regional Water Quality Control Boards. Projects must still obtain applicable waste discharge requirements, water quality certifications, or other approvals. However, CEC staff coordinate with the Water Boards to integrate applicable conditions into the CEC's Opt-In Certification.

Local

The following local laws, ordinances, and regulations apply to projects that occur within the County of Solano.

Solano County General Plan. The Solano County General Plan (Solano County 2008) encompasses all unincorporated areas of Solano County, which totals approximately 782 square miles (86 percent of Solano County). The Solano County General Plan, Chapter 4, Resources, has multiple policies related to biological resources that are relevant to the project as follows:

Policy RS.P-1. Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special status species, wetlands, sensitive natural communities, and habitat connections. Actions to enhance or restore habitat areas should not cause adverse impacts to airports, including Travis Air Force Base.

Policy RS.P-4. Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources.

Policy RS.P-6. Protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way.

Policy RS.P-71. Ensure that land use activities and development occur in a manner that minimizes the impact of earth disturbance, erosion, and surface runoff pollutants on water quality.

City of Vacaville General Plan. The City of Vacaville's General Plan specifies a number of policies or actions to address concerns related to biological resources. The specific policies and implementation programs of the General Plan Conservation and Open Space Element, are provided below:

Goal COS-1. Protect and enhance habitat for sensitive species and natural communities.

Policy COS-P1.5. Require new development proposals to provide baseline assessments prepared by qualified biologists. The assessment shall contain sufficient detail to characterize the resources on, and adjacent to, the development site. The assessment shall also identify the presence of important and sensitive resources, such as wetlands, riparian habitats, and rare, threatened, or endangered species affected by the development.

Policy COS-P1.6. Require that new development minimize the disturbance of natural habitats and vegetation. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species.

Policy COS-P1.12. Until the Solano Habitat Conservation Plan (HCP) is adopted, comply with all of the Avoidance, Minimization, and Mitigation Measures listed in the Draft Solano HCP. In addition, require that development projects provide copies of required permits, or verifiable statements that permits are not required, from CDFW (Section 2081 Incidental Take Permit) and USFWS (Section 7 Take Authorization) prior to receiving grading permits or other approvals that would permit land disturbing activities and conversion of habitats or impacts to protected species. In cases where environmental review indicates that such permits may not be required, the Community Development Director may establish time limits of not less than 45 days from the submission of an adequate request for concurrence response from an agency. If the agency has not responded or requested a time extension of no more than 90 days to complete their assessment, within the established time frame, applicable grading permits or other authorizations may be provided, subject to other City requirements and review. However, the City's issuance of grading permits or other authorizations does not absolve the applicant's obligations to comply with all other state and federal laws and regulations.

Policy COS-P1.13. Require that new development avoid the loss of special-status bat species as feasible.

Solano Multi-Species Habitat Conservation Plan. The Solano Multi-Species Habitat Conservation Plan (Solano County Water Agency 2012) would provide a regional framework for compliance with state and federal endangered species regulations while supporting future urban development, infrastructure improvements, and ongoing operations and maintenance activities conducted by participating agencies. This Plan has not been adopted and therefore does not impose any regulatory requirements on the project. Plan participants would include municipalities and various irrigation, water, sanitation, and reclamation districts within the plan area, which encompasses approximately 577,000 acres of Solano County and 8,000 acres of Yolo County. Although Solano County General Plan Policy COS-P1.12 references the draft Plan and encourages consistency with its mitigation framework, General Plan policies function as planning guidance rather than binding regulatory obligations.

Vacaville Municipal Code. Chapter 14.28 - Agricultural and Avian Foraging Habitat Impact Mitigation Program. This chapter establishes requirements for mitigating the loss of agricultural and avian foraging habitat resulting from development within the City of Vacaville. The ordinance outlines mitigation ratios, eligible mitigation lands, and implementation procedures for projects that convert agricultural lands or otherwise reduce foraging habitat for raptors and other sensitive bird species.

Solano County Code of Ordinances

Chapter 31 – Watercourses and Drainage. This chapter regulates activities affecting natural watercourses, including erosion control, bank stability, and restrictions on altering channels. It establishes standards to protect water quality, maintain drainage function, and prevent degradation of streams and canals within unincorporated Solano County.

Chapter 28 – Zoning Regulations. Chapter 28 includes biological resource protection requirements applicable to development in unincorporated Solano County. These include standards for avoiding and minimizing impacts on sensitive habitats, wetlands, special-status species, and protected trees and oak woodlands, as well as requirements for biological assessments and mitigation.

Cumulative

Under CEQA, cumulative impacts are defined as past, present, and reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effects on biological resources to be potentially significant. The proposed project is in eastern Solano County, an area experiencing ongoing agricultural conversion, industrial development, and regional energy infrastructure expansion. This analysis considers biological resources within the Vacaville-Elmira region and the broader Solano County landscape, focusing on sensitive species, habitat connectivity, and ecosystem sustainability.

The geographic scope of this cumulative impact analysis includes areas that could support special-status wildlife, including Swainson's hawk, golden eagle, white-tailed kite, burrowing owl, and American badger, among others. As shown in **Appendix A, Table A-1**, and **Figure A-1**, existing, approved, pending, and proposed projects in the region that could combine with the proposed project to result in cumulatively considerable impacts include agricultural development and conversion projects, regional transmission and distribution upgrades, nearby industrial and logistics facilities, and other renewable energy or energy-storage projects within Solano County.

5.2.2 Environmental Impacts

BIOLOGICAL RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐

BIOLOGICAL RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?	☐	☒	☐	☐
c. Have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	☐	☐	☒	☐
d. Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☒	☐	☐
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☒	☐	☐
f. Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix. G, biological resources.

5.2.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, CEC staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Impacts on biological resources were assessed through consideration of effects on the landscape, habitat, community, and species levels for the proposed project and alternatives. Impacts refer to any project related activity including initial ground disturbance, vegetation removal, construction, road improvements, operation, and any other long-term operational activities that would be implemented to support the operation of the proposed project.

Appendix G of the California Environmental Quality Act Guidelines provides a set of topical guidance questions for an agency to consider when determining whether the project has any significant impacts. For biological resources, the questions are listed in the table above.

Thresholds of Significance

A significant impact is defined in the CEQA Guidelines as "a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project" (Cal. Code Regs. tit. 14, § 15382). An impact to biological resources would be considered by CEC staff to be significant (before considering offsetting mitigation measures) if the construction or operation of the project would result in one or more of the following:

- The potential for reduction, loss, or degradation of habitat for threatened, endangered, or special status species;
- The potential for loss or "take" of any federal or state listed plant or animal species; fully protected species; special-status species or species protected under the federal or state MBTA or other regulations;
- A net loss or permanent change in the extent of functional value of any habitat or biotic community considered biologically, scientifically, recreationally, or economically significant by federal, state, or local policies, statutes, and regulations;
- Adverse effect on federally protected wetlands as defined in Section 404 of the Clean Water Act, or on state-jurisdictional waters regulated under the Porter-Cologne Water Quality Control Act or Fish and Game Code section 1602;
- Alteration or destruction of habitat that precludes reestablishment of native populations of plants and animals;
- Impairment of movement, migration, or dispersal of resident and migratory fish and wildlife species; or
- Substantial loss of habitat or population decline of any native fish, wildlife or plant species, or overall reduction in biological diversity.

Direct and Indirect Impacts. The CEQA Guidelines define direct impacts as those impacts that result from the project and occur at the same time and place as project activities. Some examples of direct impacts could include the removal of vegetation or habitat; disruption to natural behavior from increased human presence and/or noise, lighting; mortality or injury from crushing, trampling, or entrapment; and exposure to fugitive dust, herbicides, or other hazardous materials.

Indirect impacts are caused by the project but can occur later in time or farther removed in distance and are still reasonably foreseeable and related to the operation of the project. Indirect impacts can include the potential for spread of invasive plant species imported onto the site by construction equipment, changes to soil or hydrology that adversely affect native species over time, avian collision with gen-tie lines, disruption of prey base, or increased predation through alterations of the physical landscape from project features. Indirect impacts may also include fragmentation of habitat, edge effects, increased traffic, and human disturbance. Long-term indirect effects may also occur from the operation of the proposed project.

Operational impacts include direct and indirect impacts that occur during the life of project operation. Generally, these impacts occur during maintenance activities and are similar to those that occur during construction but occur at substantially lower levels and of less duration. In addition to routine activities during operation of the project, it is possible that the BESS system could be subject to thermal runaway and result in a battery fire, which is discussed further below under **Thermal Runaway and BESS Fires**. For the non-jurisdictional project components, no new or expanded operational vegetation management activities for the interconnection line are planned by PG&E. The POCO structure would be located within an existing orchard, and the remaining structures to be maintained by PG&E are located within an existing PG&E substation where routine vegetation management already occurs to maintain GO 95 clearance requirements. As a result, operation of the project would not result in changes to existing vegetation management activities. Operational vegetation management is a covered activity under PG&E's Bay Area Habitat Conservation Plan (BAHCP) and Bay Area Incidental Take Permit (BAITP), and applicable BAHCP/BAITP measures would continue to be implemented as part of PG&E's standard maintenance practices. However, construction of the proposed interconnection facilities is not a covered activity under the BAHCP or BAITP, and no incidental take authorization applies to construction activities associated with the interconnection facilities.

Permanent and Temporary Impacts. Direct and indirect impacts on biological resources could be permanent or temporary in nature. Impacts that result in the irreversible alteration or elimination of biological resources are classified by CEC staff as permanent. However, any impact that has reversible effects on biological resources could be viewed as short-term and temporary if the affected area can be fully restored within one year and if recovery is expected without long-term effects. Impacts that cannot be fully restored within one year may be considered semi-permanent or permanent, depending on the extent and type of disturbance and the feasibility of full habitat recovery within two years.

Impact analyses typically characterize effects to vegetation and wildlife habitat as either temporary, or permanent. Permanent impacts are generally associated with land use conversion or disturbances that would preclude most natural wildlife habitat function throughout the life of a project or longer. These include site mobilization, construction and operation of permanent project components such as project facilities, associated infrastructure, and any permanent new or widened access routes. Habitat impacts that persist for the duration of the project or beyond are considered permanent for the purposes of this analysis. Permanent impacts also include areas where habitat cannot feasibly be restored to pre-project conditions within two years.

Temporary impacts are generally associated with construction disturbance that allows for a return to more natural conditions following project completion. These impacts may be actively revegetated or enhanced and are typically expected to return to natural conditions within approximately one year. Disturbances that require more than one year

but can be fully restored within two years are considered semi-permanent impacts. Disturbances that cannot be restored within two years are considered permanent.

The construction of the project would result in permanent impacts within the project footprint and associated components, including the location of project facilities and any permanent new or widened access routes. During operation, these areas would remain permanently converted. In addition, the project may result in long-term impacts within areas disturbed by temporary site mobilization and construction activities, particularly where habitat recovery is constrained by slow natural regeneration rates, soil degradation, habitat fragmentation, or changes in species composition.

Mitigation Strategy

This CEQA analysis evaluates biological impacts resulting from all aspects of the project. Whenever CEC staff identifies impacts from development of the site and related facilities, staff proposes conditions of certification (COCs) for the jurisdictional project components within CEC Opt-In certification, and staff recommends mitigation measures (MM) for the non-jurisdictional project components to reduce project impacts to less than significant levels. Each of the staff's proposed COCs and recommended MMs have been developed by CEC staff to ensure that impacts to sensitive biological resources are minimized or avoided to the extent feasible and impacts are reduced to less than significant. Where appropriate, the applicant's proposed mitigation measures were incorporated into the CEC staff's proposed COCs below.

To facilitate effective implementation of Assembly Bill 205 (AB 205), the CEC and CDFW entered into a Memorandum of Understanding (MOU) in 2022. This MOU establishes a coordination plan designed to ensure timely and effective consultation between the two agencies regarding potential impacts of energy projects on fish, wildlife, and plant resources, as well as their habitats. The MOU ensures CDFW's expertise is integrated into project review, particularly for Fish and Game Code authorizations such as incidental take authorization. These recommendations are incorporated into the CEC's certificate as enforceable COCs, which ensure that approved projects meet environmental protection requirements. In addition, CEC staff incorporated CDFW staff's recommendations into mitigation measures for the non-jurisdictional project components, as needed.

Additional impacts would also be associated with non-jurisdictional project components specifically for the transmission line interconnection, which would include a new 230-kV Corby Bay structure with associated foundations and supports on approximately 0.6 acre of the existing Vaca-Dixon Substation. These non-jurisdictional project components would be permitted by the California Public Utilities Commission (CPUC) and would ensure impacts are less than significant by requiring any necessary mitigation for impacts. The mitigation measures recommended below would be enforced by the CPUC as mitigation measures (MMs). These MMs include standard PG&E Construction Measures as well as CEC staff's recommended mitigation measures.

5.2.2.2 Direct and Indirect Impacts

This section analyzes the potential for direct and indirect impacts to biological resources from the construction and operation of the proposed project and provides mitigation, as necessary, to reduce the severity of potentially adverse impacts. For fully protected species the mitigation is intended to fully mitigate the projects direct and indirect effects to that species. If a significant impact is identified, appropriate mitigation to reduce impacts to less than significant levels is then developed. Within this section, whenever a significant impact is identified appropriate mitigation measures are identified. This includes proposed conditions of certification (COC) for the jurisdictional project components and recommended mitigation measures for the non-jurisdictional project components and provides supporting rationale for the effectiveness of the measures. The complete mitigation recommendations are found in the subsections entitled Proposed Conditions of Certification (COCs) and Recommended Mitigation Measures.

a. Would the project have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Special-Status Plants

Construction

No Impact. Based on the analysis below, the proposed project would not cause substantial adverse effects on any special-status plant species, either directly or through habitat modification.

Jurisdictional Project Components

No state or federally listed or CRPR species, including CRPR 1B or 2 ranked plants, were detected during floristic protocol-level botanical surveys conducted in 2023 and 2024. In addition, no special-status plants are expected to occur in this location due to the lack of suitable habitat. The project site is highly disturbed and lacks the specific habitat characteristics, soils, and hydrologic conditions required to support rare plant species known to occur in this region.

In addition, Gibson Canyon Creek is a highly modified, intermittently flowing drainage that is routinely maintained for flood control and water conveyance. As a result, special-status plants are not expected to occur in this area.

Site mobilization and construction would occur within highly disturbed areas that lack the potential to support special-status plant species; therefore, the project would not result in direct or indirect impacts to sensitive species. Given the absence of suitable

habitat and the low likelihood of occurrence, CEC staff determined that mitigation for special-status plants is not warranted for the project.

Non-Jurisdictional Project Components

The location of the proposed interconnection facilities is highly disturbed and actively maintained for existing utility operations and agricultural use. The Vaca-Dixon Substation area is mostly paved or graveled and is regularly cleared of vegetation. The gen-tie line corridor crosses actively farmed fields, mowed utility right-of-way, and compacted access roads. As a result, site conditions are characterized by compacted soils, altered runoff patterns, and vegetation communities dominated by ruderal species. These conditions do not support suitable habitat for special-status plant species, including disturbance-tolerant taxa, as they remove vegetation and disturb soils. Floristic botanical surveys did not detect any special-status plant species, and site conditions further indicate that such species are unlikely to occur, including disturbance-tolerant taxa.

Two small seasonal wetlands and a short segment of Gibson Canyon Creek occur within the project site. However, these features have been altered, channelized, and are dominated by common non-native species. These areas lack the soil, hydrology, or intact native plant communities typically required to support special-status wetland plant species.

No state or federally listed plants or CRPR species (including CRPR 1B or 2 species), were detected during floristic botanical surveys for the proposed project. Given the absence of suitable habitat and the highly disturbed nature of the site, no special-status plant species are expected to occur. Therefore, the proposed project would not result in direct or indirect impacts to sensitive plant species.

Operation

No Impact. Special status plants were not detected on the project site nor are they expected to occur. Direct and indirect impacts to special status plants are not expected to occur during operation activities. Therefore, operation of the project would not result in impacts to special-status plants.

Jurisdictional Project Components

Operation of the project is not expected to result in impacts to sensitive plants. No special-status plant species were detected within the project site, and none are expected to occur due to the absence of suitable habitat. Direct and indirect impacts to special status plants are not expected to occur during operation.

Non-Jurisdictional Project Components

Operation of the project is not expected to result in impacts to sensitive plants. No special status plants were detected within the site for the non-jurisdictional project

components nor are they expected to occur. Direct and indirect impacts to sensitive plants are not expected to occur during operational activities.

Common Wildlife, Including Nesting Birds

Construction

Less Than Significant Impact. Impacts to common wildlife are not generally considered a significant impact under CEQA. However, many common bird species, including nesting migratory birds, are protected under the federal MBTA, California Migratory Bird Protection Act, and the California Fish and Game Code. In addition, there are several species that lack any formal designation, but are on the CDFW Special Animals List (CDFW 2025a), CDFW Watch List (WL), and/or are considered USFWS BCC. These species are not automatically subject to protection or mitigation requirements under CEQA. Their inclusion in environmental review is discretionary and typically based on site-specific evidence of ecological significance, such as local rarity, habitat dependence, or potential for population-level impacts.

Based on the analysis below, the proposed project would not likely result in significant impacts on common wildlife, including nesting birds. Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, and **BIO-12**, **AQ-SC3**, **AQ-SC4**, **HAZ-1**, **WORKER SAFETY-1**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, and **MM BIO-4** would further avoid or minimize potential impacts from the project.

Jurisdictional Project Components

The project area supports a variety of common wildlife species and their distribution in the project area is dependent on the location such as the fallow agricultural fields, orchards, and non-native woodlands.

Surveys conducted within the project area documented the presence of foraging birds, including special-status species such as Swainson's hawk and white-tailed kite. Cooper's hawk (*Accipiter cooperii*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), common raven, American kestrel (*Falco sparverius*), and other bird species were observed in the project area. Although nesting habitat is limited for some species, existing vegetation, non-native grasses, orchard trees, and ruderal woodland provide suitable nesting habitat for yellow-billed magpie, loggerhead shrike and other species. In addition, ground nesting birds such as killdeer may nest on the existing gravel roads while some raptors will nest on transmission towers.

These and other bird species may use the project site for foraging or during winter migration, along with many other species of common wildlife. See **Table 5.2-5**, for a complete list of species with the potential to forage in the project site and vicinity, including along Gibson Canyon Creek, and surrounding areas. Except for a few non-native birds such as European starling (*Sturnus vulgaris*) and house sparrow (*Passer domesticus*), the loss of active bird nests or young is regulated by MBTA, California

Migratory Bird Protection Act, and Fish and Game Code, section 3503 and would be considered an adverse impact.

Direct impacts to nesting birds include ground-disturbing activities associated with site mobilization and construction of the project and gen-tie line, as well as increased noise levels from heavy equipment, ground borne vibration, increased human presence, and exposure to fugitive dust. Indirect impacts to nesting birds could include the loss of habitat due to the colonization of weeds, dust, or human disturbance due to weed maintenance, and routine inspection and maintenance at the facility.

Site mobilization and construction activities conducted during the breeding season could result in the displacement of breeding birds and the abandonment of active nests, as well as a disruption in foraging activity, particularly on the larger facility site and parking areas. The removal of habitat during the breeding season could result in the displacement of breeding birds and the abandonment of active nests.

Breeding birds and other wildlife may temporarily or permanently leave their territories to avoid site mobilization and construction activities, which could lead to reduced reproductive success and increased mortality on a local scale. Increased vehicle travel on access routes could displace nesting birds or result in lower nest success.

How construction noise affects a specific bird can vary greatly depending on the location of a nest and the species nesting. The scientific record contains peer-reviewed research documenting the negative effects of anthropogenic noise on many species of nesting birds. Noise disturbance due to construction, traffic, and other anthropogenic activity has been found to have detrimental impacts on pairing success and clutch size in some bird populations (Habib et al. 2007; Halfwerk et al. 2011). However, other more disturbance tolerant birds such as house finches and king birds appear to successfully nest near noise producing sources and some activity build nests within active construction sites. However, there may be underlying risks to birds who elect to nest near locations with elevated sound levels such as a construction project, highway, or other sound generating facility.

Conversely, many other birds are intolerant of any human disturbance. Anthropogenic noise may affect populations by masking or distorting male song patterns or inducing a stress response that negatively impacts fitness (Habib et al. 2007; Kleist et al. 2018). Barber et al., (2009) noted that elevated noise levels can result in masking of predators and decrease communication between individual groups of birds. They also found that regardless of the mechanisms involved, their study suggested that noise decreases a direct measure of fitness and hatching success, in the western bluebird, a species previously thought to be noise tolerant.

Direct and indirect impacts to other common wildlife species depend on many factors including the extent of species use of the site (i.e., size of their home range), behavioral factors that result in wildlife seeking refuge rather than dispersing (i.e., site fidelity,

cryptic behavior); a species dispersal ability and ecological characteristics (e.g., fossorial, highly motile versus slow moving); ecological characteristics (i.e., fossorial, aerial dispersal, highly mobile), and the ability of the species to evade or disperse from the construction activity. Project level effects on wildlife are further influenced by factors such as the seasonal use of the site. For example, some species including small mammals and many reptiles are year-round residents with small or restricted home ranges while other species, including some birds, may be periodic visitors or have large or overlapping home ranges. Other species such as large raptors limit their activity on the site to foraging. Likewise, many species of birds may be semi-permanent dwellers or seasonal residents (i.e., migratory birds) that are present either as breeding pairs or overfly the area.

Direct impacts to wildlife could include mortality from trampling or crushing; increased noise levels due to heavy equipment use; light impacts from construction during low-light periods; increased vehicular and human presence along existing access roads; displacement due to habitat modifications, including vegetation removal, alterations of existing soil conditions; vibration and fugitive dust; and increased erosion and sediment transport. Wildlife could also become entombed in burrows or be subject to increased risk of predation when flushed from cover by equipment or construction workers. Fires that occur because of site mobilization and construction activities can quickly spread in arid regions.

Noise from clearing, grading and other site mobilization or construction activities could also affect wildlife in adjacent habitats by interfering with breeding or foraging activities and movement patterns, causing animals to temporarily avoid areas adjacent to the construction zone. See **Section 5.9, Noise and Vibration**, which provides additional information on construction and operational noise levels. Nocturnal wildlife would be affected less by construction than diurnal species since construction would occur primarily during daylight hours. However, construction may also occur during dusk and dawn when many species are highly active. More mobile species such as birds and larger mammals would likely disperse into adjacent habitat areas during land clearing, grading and construction. However, smaller animals would be less able to disperse. During construction it is likely that many of these species, especially fossorial or slow-moving species, would be subject to displacement, injury, or mortality.

Indirect impacts to wildlife include the spread of invasive plant species that alter prey availability, alterations in light regimes and the creation of overhead structures, or changes to soil or hydrology that adversely affect native species over time. Indirect impacts may also include increased traffic and human disturbance and the disruption of prey base or increased predation through alterations of the physical landscape from project features (i.e., fencing, transmission lines) that provide perch sites or shelter for predators.

Project related effects to common wildlife are typically not considered significant under CEQA, and for a project of this relatively small footprint, most impacts would be limited

to a few common species that currently use the disturbed agricultural area. Mobile wildlife would generally disperse from active work areas, and once vegetation is cleared, the potential for impacts to most species would be further reduced. The primary exception is ground-nesting and tree or shrub nesting birds, which could be adversely affected if construction occurs during the nesting season. Any project related impact that results in the destruction of nests or eggs and mortality or injury to individual birds would be considered a significant impact.

The applicant proposed general impact avoidance and minimization measures to reduce construction related impacts to common and sensitive wildlife. CEC staff reviewed the applicant's proposed mitigation and incorporated the measures, as appropriate, into staff's proposed COCs, which include the following COCs: **BIO-1** (Designated Biologist Selection), **BIO-2** (Designated Biologist Duties), **BIO-3** (Biological Monitor Selection), **BIO-4** (Designated Biologist and Biological Monitor Authority), **BIO-5** (Worker Environmental Awareness Program), **BIO-6** (Biological Resources Mitigation Implementation and Monitoring Plan), **BIO-7** (General Impact and Avoidance Measures), **BIO-8** (Vegetation Restoration Plan), and **BIO-12** (Nesting Birds Avoidance and Minimization Measures).

Implementation of staff's proposed COCs **BIO-1** through **BIO-5** would require qualified biologists and biological monitors to be present during site mobilization and construction activities to ensure impacts to sensitive biological resources are minimized and would include environmental awareness training for all on site personnel. Staff's proposed COCs **BIO-6** through **BIO-8** include, but are not limited to, general construction best management practices (BMPs) to avoid sensitive biological resources, requirements for habitat restoration, and measures to minimize the introduction and spread of non-native invasive weeds. These measures would educate workers on the presence and sensitivity of wildlife that may occur in the project area; establish limitations on work during the breeding and nesting season; require inspection for wildlife beneath vehicles; control fugitive dust and vehicle speeds; monitor construction activities to reduce direct wildlife mortality; and provide for the control of noxious weeds.

In addition, staff's proposed COC **BIO-12** includes measures to reduce impacts to nesting birds, such as conducting pre-construction surveys for nesting birds and the establishment of non-disturbance buffers to avoid disturbing active nest sites. Staff's proposed COC **BIO-12** would require the development of a Nesting Bird Management Plan (NBMP) that identifies bird species with the potential to nest in the project area, identifies likely nesting locations, and specifies qualifications for surveyors and biological monitors, survey methodologies, timing and frequency of surveys, and monitoring requirements for active nests. The condition would include requirements for the DB to maintain a nesting bird log to track active nests and provide routine reports to the CEC Compliance Project Manager (CPM) on nest status.

To address impacts related to fugitive dust generated during site mobilization and construction, staff recommend implementation of dust control measures to avoid adverse impacts on common wildlife and birds, including reducing dust deposition on vegetation and foraging substrates both on-site and in adjacent areas. These include staff's proposed COC **AQ-SC3** (Construction Fugitive Dust Control), which would require watering roads and/or stabilizing them with soil binders. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction. In addition, COC **AQ-SC4** (Dust Plume Response Requirement) would require a qualified dust monitor during dust producing activities and would require remedial measures if fugitive dust exceeds authorized limits, see **Section 5.1, Air Quality** for further discussion.

Staff's proposed COCs **HAZ-1** would require a Spill Prevention Control and Countermeasure Plan to ensure proper hazardous materials containment, and **WORKER SAFETY-1** would require a Construction Fire Prevention Plan for construction, see **Section 4.4, Worker Safety and Fire Protection** and **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire** for further discussion.

With the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-12**, **AQ-SC3**, **AQ-SC4**, **HAZ-1**, and **WORKER SAFETY-1**, impacts to common and sensitive wildlife would be reduced to less than significant.

Non-Jurisdictional Project Components

The off-site project components for the transmission line interconnection would remain unfenced, and common species of wildlife would have the ability to disperse freely. However, construction-related impacts would still have the potential to occur.

Direct and indirect impacts would be the same as described for the jurisdictional project components, which could include mortality from trampling or crushing; disturbance from increased noise levels due to heavy equipment use; light impacts from construction during low-light periods; increased vehicular and human presence along existing access roads; and other factors.

Indirect impacts may also include increased traffic and human disturbance and the disruption of prey base or increased predation through alterations of the physical landscape from project features that provide perch sites or shelter for predators.

Upon request from staff, PG&E provided a list of standard PG&E Construction Measures, which are drawn from the Final PG&E Bay Area Operations and Maintenance Habitat Conservation Plan (BAHCP) (BAHCP 2017). CEC staff reviewed these measures and identified those applicable to avoiding and minimizing direct and indirect impacts to common wildlife and nesting birds during site mobilization and construction. Although these measures originate from the PG&E BAHCP, the proposed project is not a covered

activity under the HCP, and the measures are applied here solely as PG&E's standard construction practices.

CEC staff recommends implementation of the following mitigation measures to address impacts to common wildlife and nesting birds: **MM BIO-1** (Annual Training) and **MM BIO-2** (Standard Construction Practices) which would minimize direct and indirect impacts on common sensitive wildlife, including nesting birds. PG&E has committed to conducting construction and ground disturbing activities outside of the nesting season, which would avoid disturbance to active nests.

Because the standard construction measures provided by PG&E did not include several practices necessary to ensure adequate avoidance and minimization of biological impacts, staff developed **MM BIO-4** (General Impact Avoidance and Minimization Measures) and recommend that PG&E implement this measure. **MM BIO-4** includes APLIC-compliant design and installation of the gen-tie line to reduce electrocution and collision risk, as well as general biological resource protection measures during construction. These measures would implement general wildlife protection practices such as worker environmental awareness training, seasonal work limitations, inspection for wildlife under vehicles, fugitive dust and vehicle speed control, construction monitoring to reduce direct wildlife mortality, and the control of noxious weeds.

Implementation of CEC staff's recommended mitigation measures, including **MM BIO-1**, **MM BIO-2**, and **MM BIO-4**, would reduce impacts to common and sensitive wildlife to less than significant.

Operation

Jurisdictional Project Components

Operation activities associated with the proposed project would not result in adverse impacts to common wildlife or nesting birds. The BESS facility would be fully fenced, enclosing project infrastructure and limiting access by larger wildlife. The fence would not exclude small mammals, reptiles, amphibians, or birds, which could pass through, under, or over it. The overhead gen-tie line corridor would not be fenced and would allow continued wildlife movement in the area.

In addition, the surrounding agricultural fields and grasslands would continue to provide suitable foraging habitat for raptors and other wildlife. Operational activities outside of the fenced BESS facility would be limited and infrequent and would occur in areas documented to have low habitat value and limited potential to support special-status species. These activities would take place within areas already subject to regular disturbance from ongoing agricultural practices, vehicular travel along Kilkenny Road, and routine activity within established electrical line corridors.

Operation and maintenance of the facility could introduce several potential impacts to nesting birds. The first is related to the protection of birds that are likely to nest on

project facilities after the project is completed. Common disturbance tolerant birds are likely to forage or opportunistically nest on structures within the project area. In addition, birds may be attracted to the water storage ponds if surface water access is available. Routine maintenance activities could disturb nesting birds and result in nest failure if nests are present on equipment or structures. These impacts would be greatly reduced compared to construction and would be mitigated through implementation of the same types of COCs identified for construction of the proposed project. These include inspecting equipment for nests prior to cleaning or repairs, ensuring that water is not available from the storage ponds and conducting weed management outside the breeding season to the extent feasible.

Birds would also be subject to new baseline noise levels and vibration from the operation of the facility. Noise would emanate from the generators when they operate. Noise levels in adjacent habitat may result in the displacement of some less disturbance tolerant species. Noise could mask predators, disrupt breeding calls, or result in increased vigilance for some birds; however, because of the adjacent road and agricultural activity, the species present in this area are likely acclimated to existing noise levels. Operational noise and activity levels would be minimal.

The most likely operational risk to birds is collision with the new transmission line. There are several factors that contribute to avian collisions including the location of the line, the type and behavior of the bird, weather conditions, and size or type of the towers. Bird collisions with powerlines, or more commonly with the thin shield wire located above the powerlines, is a known phenomenon and can pose a risk to birds. Studies indicate that most observed power line collisions were with narrower, less visible overhead shield wires and lines that cross daily movement corridors (between roosting, nesting, and feeding areas) (Luzenski et al. 2016). Collisions risk depends on a species' ability to detect these thin wires and shield wires are 50 percent thinner and less visible than the larger more visible transmission lines and account for most collisions with transmission lines (Bernardino et al. 2018).

The highest risk is in locations where a transmission line bisects a daily or migratory flight path or during poor weather conditions. Collision risk increases where lines are located near or bisect important foraging habitat, riparian areas, lakes, ponds, and wetlands. This may include the many large agricultural fields and orchards that are present in the region.

Several other factors can affect the risk of birds related to collision with transmission lines including the bird's morphological characteristics such as vision and flight patterns, and their behavioral characteristics such as flocking or foraging behavior, or migratory patterns (Bateman et al. 2023). Collision rates can increase in low light conditions, during inclement weather, such as fog, or rain, during strong winds, and during panic flushes when birds are startled by a disturbance or are fleeing from danger (Brown and Drewien 1993; Luzenski et al. 2016). All these conditions are common in the region to some degree.

Collision mortality estimates in North America have not identified a noticeable effect on long-term population trends; however, it may increase risk for a subset of species with susceptible characteristics. Collisions primarily affect strong, fast fliers with poor or restricted vision (i.e., waterfowl and crane species) (Bateman et al. 2023). Additionally, large, heavy-bodied birds (swans, pelicans, herons, and cranes) are thought to be more vulnerable than smaller, more maneuverable species (Luzenski et al. 2016). One study identified that vulnerable species that may be at risk of population-level impacts shared characteristics including low maneuverability in flight, hazardous behavioral traits (especially flight height and flocking flight), long-lived and slow-reproducing life-history, habitat specialization, and unfavorable conservation status (D'Amico et al. 2019).

Passerines (i.e., songbirds) and waterfowl (e.g., ducks) collide with powerlines (APLIC 2012), particularly during nocturnal migrations or poor weather conditions (Avery et al. 1978). However, passerines and waterfowl may have a lower potential for collisions than larger birds, such as raptors, due to behavioral factors. For example, smaller birds tend to reduce their flight activity during poor weather conditions (Avery et al., 1978). Additionally, passerines and waterfowl tend to fly under power lines, as opposed to larger species, which generally fly over the lines and risk colliding with the higher static lines.

The proposed gen-tie line is extremely short but would be located in an active orchard. Operation of the project could result in small numbers of birds periodically colliding with the shield wire along the length of the alignment. Except for raptors, collision risk for most species appears low based on the location of the line. However, there are numerous raptors in the project area and the state listed Swainson's hawk has been documented nearby.

Raptors, ravens, and other large birds often perch and nest on tall structures, including electrical transmission towers and poles. Golden eagles, peregrine falcons, and other large raptors are most susceptible to electrocution on transmission structures because of their large size and wingspan, distribution, and behavior (APLIC 2012). Collisions involving raptors have occurred but appear to be relatively uncommon compared with collisions involving other species groups (Luzenski et al. 2016). Distribution lines that are greater than 1 kilovolt (kV) but less than 69 kV generally have less spacing than transmission lines, thus posing an electrocution hazard for perching raptors. Configurations less than 1 kV or greater than 69 kV, like the proposed 115 kV sub transmission system, typically do not present an electrocution potential, based on conductor placement and orientation (APLIC 2012). The likelihood of electrocutions occurring at voltages greater than 69 kV is extremely low (APLIC 2012) and is not expected to occur on the proposed 230 kV transmission line. Therefore, the risk of electrocution would be considered less than significant.

To reduce potential electrocution and collision risk staff proposes COC **BIO-7** (General Impact Avoidance and Minimization Measures). This condition requires that the gen-tie line be constructed in compliance with APLIC standards to reduce the risk of

electrocution and include aerial markers for the shield wire to reduce the risk of collision for Swainson's hawk. In addition, staff proposes COC **BIO-5** (Worker Environmental Awareness Program (WEAP)), which would require operation personnel to receive WEAP training to ensure they can recognize and report potential biological resource issues during limited and infrequent operation activities. If sensitive biological resources (e.g., active bird nests) are identified, the DB would establish appropriate avoidance buffers and provide guidance to ensure compliance with applicable avoidance and minimization measures.

If any activities during operation require biological monitoring, a DB or Biological Monitor would conduct that monitoring consistent with COCs **BIO-1** through **BIO-4**. If ground disturbance or other activities with the potential to disturb special-status species are anticipated, a Designated Biologist (DB) would be consulted to evaluate potential impacts, identify appropriate avoidance and minimization measures based on the approved Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP), per COC **BIO-6** and provide biological monitoring, as needed.

Although limited nesting habitat would be present within the facility site birds could opportunistically nest on project structures during operation. If nesting occurs, the DB would implement COC **BIO-12** (Nesting Bird Avoidance and Minimization Measures), which would require protection of active nests and avoidance of disturbance until young have fledged.

Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, **BIO-12**, **AQ-SC3**, **AQ-SC4**, **HAZ-1**, and **WORKER SAFETY-2** would avoid or minimize impacts during operation to common and sensitive wildlife, including nesting birds. Therefore, impacts would be less than significant.

Non-Jurisdictional Project Components

Operational activities associated with the off-site project components for the transmission line interconnection would not result in adverse impacts to common wildlife or nesting birds. The PG&E Vaca-Dixon Substation is an existing, fully fenced, and highly disturbed operational facility, and no suitable nesting habitat occurs within the fenced footprint. Noise and activity levels during operation would be minimal. The overhead gen-tie line corridor would remain unfenced, allowing continued wildlife movement, and surrounding agricultural fields and grasslands would continue to provide suitable foraging habitat for raptors and other wildlife. The gen-tie line would also be constructed and maintained in compliance with CPUC General Order 95 (GO 95), which includes avian-safe design requirements that reduce electrocution risk for raptors and other large birds.

Although nesting habitat does not occur within the operational footprint, of the off-site components, Swainson's hawk and other birds are known to nest in trees outside the fenced PG&E Vaca-Dixon Substation. These nests would not be affected by operation because no new operational disturbance would occur beyond existing PG&E activities. If

any birds were to attempt nesting on structures or equipment along the gen-tie line during operation, CEC staff recommend that PG&E implement **MM BIO-2** (Standard Construction Practices) and **MM BIO-3** (Swainson's Hawk). **MM BIO-2** requires that nests with eggs and/or chicks be avoided by contacting a Biologist, Land Planner, or the Avian Protection Program Manager for further guidance, and **MM BIO-3** requires that construction not occur during the nesting season to avoid disturbance to active nests.

Implementation of CEC staff's recommended mitigation measures **MM BIO-1**, **MM BIO-2**, and **MM BIO-3** would avoid or reduce operation impacts to common and sensitive wildlife, including nesting birds, to less than significant.

Special-Status Wildlife

The proposed project has the potential to result in significant adverse impacts on several special-status wildlife species. These impacts could occur both directly (e.g., mortality during construction) and indirectly through the permanent or temporary modification of suitable habitat within the project area. Observations during field surveys confirmed the presence of foraging Swainson's hawk and white-tailed kite in the project study area, and two active Swainson's hawk nests were documented in the vicinity of the PG&E Vaca-Dixon Substation. A comprehensive list of all special-status wildlife with the potential to occur is presented in **Table 5.2-5**. The following sections detail the specific impacts identified for these species.

Special Status Invertebrates

No threatened, endangered, candidate, proposed for listing, or other special-status invertebrates were observed in the project area during biological surveys conducted by the applicant (TT 2024a). No vernal pools are present within the project site. Neither Crotch's bumble bee nor monarch butterfly were identified during the surveys. However, both species have some potential to occur in the project area.

Crotch's Bumble Bee

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect Crotch's bumble bee, either directly or through habitat modifications, and impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-9**, **BIO-21**, **AQ-SC3**, **AQ-SC4** and recommended mitigation measures **MM BIO-1, MM BIO-2, MM BIO-4, MM BIO-5**, and **MM BIO-9**.

Jurisdictional Project Components

Crotch's bumble bee is a candidate for listing and is afforded the same protections as a threatened or endangered species under CESA. Crotch's bumble bee relies on habitat that provides diverse and seasonally available floral resources throughout the colony's lifecycle. The project disturbance area is dominated by agricultural and developed land

uses and lacks native floral diversity; however, non-native flowering plants are present and may provide limited foraging opportunities for the species. These include common weedy species such as mustards (Brassica spp.), which are known to be used by Crotch's bumble bee but generally provide short-duration and low-diversity floral resources.

Although near-surface disturbances associated with agricultural practices (e.g., mowing, tilling, planting, and grazing) reduce habitat quality (Hatfield et al. 2018), the presence of small mammal burrows and available nonnative floral resources indicates that the project area retains some potential to support the species. Crotch's bumble bee was not observed during field surveys, but the absence of detections does not preclude the species from occurring on the site. While native floristic resources are lacking, non-native flowering resources are present throughout the project study area, and the site is within the species' known geographic range. One historical record from 2007 occurs approximately 6.3 miles southwest of the project site (CDFW 2026a). In addition, iNaturalist documents eight "research grade" occurrences in Solano County from 2022 to the present (iNaturalist 2026).

Direct impacts to Crotch's bumble bee, if present, during construction could include the loss or modification of foraging and nesting habitat, disturbance or destruction of occupied nests, and impacts on individuals and/or nesting sites from exposure to human disturbance, collision with vehicles, ground vibration, fugitive dust, and other hazardous materials. Indirect impacts could include the loss or degradation of habitat from invasive plants and noxious weeds, or loss of food resources (native flowering plants) through pesticide use. If this species occurs in the project area or on site, any loss or disturbance to individuals or nesting colonies would be considered a significant impact absent mitigation.

The applicant has not requested take authorization for Crotch's bumble bee. Therefore, take of the species is not authorized, and all impacts to individuals and occupied habitat must be avoided. Accordingly, staff has developed Conditions of Certification to ensure avoidance of impacts to the species during site mobilization and construction, consistent with the requirements of CESA.

To avoid impacts to Crotch's bumble bee, CEC staff proposes COC **BIO-9** (Crotch's Bumble Bee Avoidance Measures), which would require pre-construction protocol-level Crotch's bumble bee surveys, avoidance of suitable habitat for the species within the project area during the active flight season, enforcement of speed limits, and complete avoidance of any active nesting sites. CEC staff also recommends implementation of general mitigation measures, including COCs **BIO-1** through **BIO-7**, described above under the "Common Wildlife" subsection. The applicant has proposed a vegetation restoration plan that includes a seed mix appropriate for Crotch's bumble bee. This restoration plan has been incorporated into CEC staff's proposed COC **BIO-8** (Vegetation Restoration Plan) and requires the project owner to restore all temporarily disturbed areas to pre-project conditions within one year. CEC staff further proposes

BIO-21 (Post BESS Fire Monitoring and Management Plan), which would require the project owner to implement a post-fire monitoring and management program to address potential impacts to Crotch's bumble bee and its habitat.

CEC staff also proposes dust control measures to avoid adverse impacts on nectar and pollen sources both on-site and immediately off-site. These include COC **AQ-SC3** (Construction Fugitive Dust Control), which would include watering roads and/or stabilizing them with soil binders. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction. COC **AQ-SC4** (Dust Plume Response Requirement) would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits, see **Section 5.1, Air Quality** for a further discussion.

Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-9**, **BIO-21**, **AQ-SC3**, and **AQ-SC4** would avoid or minimize impacts to Crotch's bumble bee. With implementation of these measures, impacts would be less than significant.

Non-Jurisdictional Project Components

The off-site transmission line interconnection components would be located in areas dominated by agricultural and developed land uses and that lack native floral diversity; however, nonnative flowering plants are present and may provide limited foraging opportunities for the species. Although near-surface disturbances associated with agricultural practices (e.g., mowing, tilling, planting, and grazing) reduce habitat quality (Hatfield et al. 2018), the presence of small mammal burrows and available nonnative floral resources indicates that the project site provides only marginal, low-quality habitat for the species.

No Crotch's bumble bees were observed during non-protocol level field surveys; however, the absence of observations does not confirm the species could not occur in the site, although habitat conditions are highly disturbed and generally unsuitable. While native floristic resources are lacking, nonnative flowering resources are present throughout the project area, and the site is within the species' known geographic range. One historical record from 2007 occurs approximately 6.3 miles southwest of the project site (CDFW 2026a). In addition, iNaturalist documents eight "research grade" occurrences in Solano County from 2022 to the present (iNaturalist 2026).

Direct impacts to Crotch's bumble bee, if present, during site mobilization and construction could include the loss or modification of foraging and nesting habitat, disturbance or destruction of occupied nests, and impacts on individuals and/or nesting sites from exposure to human disturbance, collision with vehicles, ground vibration, fugitive dust, and other hazardous materials. Indirect impacts could include the loss or degradation of habitat from invasive plants and noxious weeds, or loss of food resources (native flowering plants) through pesticide use. If this species occurs in the

project area or on site, any loss or disturbance to individuals or nesting colonies would be considered a significant impact absent mitigation. PG&E has not obtained an incidental take permit for the off-site transmission line interconnection components; therefore, any take of the species is not authorized.

As part of the standard PG&E Construction Measures, staff recommend that PG&E implement **MM BIO-1** (Annual Training) and **MM BIO-2** (Standard Construction Practices), which would provide environmental awareness training for all personnel and establish standard procedures to avoid and minimize impacts to biological resources during site mobilization and construction. However, direct impacts to Crotch's bumble bee could still occur without additional mitigation, if present. To further reduce direct impacts on this species, staff recommends the implementation of **MM BIO-4** (General Impact Avoidance and Minimization Measures), **MM BIO-5** (Biological Monitor During Construction), and **MM BIO-9** (Crotch's Bumble Bee) which would require a qualified biologist to conduct pre-construction surveys and daily monitoring for Crotch's bumble bee in all project areas, following CDFW non-invasive protocols. If bees or nests are detected, the qualified biologist would coordinate with CPUC and CDFW to implement avoidance measures necessary to avoid take or seek take coverage.

Implementation of the CEC staff's recommended mitigation measures **MM BIO-1, MM BIO-2, MM BIO-4, MM BIO-5**, and **MM BIO-9** would avoid or minimize impacts to Crotch's bumble bee such that impacts would be reduced to less than significant.

Operation

No Impact. Based on the analysis below, the operations associated with the proposed project would not result in direct or indirect impacts to Crotch's bumble bee or its habitat.

Non-Jurisdictional Project Components

Operational activities associated with the project would not result in impacts to Crotch's bumble bee. After construction is completed, operational activities would be limited to routine inspections, equipment monitoring, and periodic maintenance, none of which would involve ground disturbance or removal of floral resources. The BESS facility and off-site transmission line interconnection components would remain within previously disturbed and developed areas, and no additional vegetation clearing or soil disturbance would occur. Because habitat conditions would not change during operation, and no new impacts on potential foraging or nesting habitat would be introduced, operational activities would not impact Crotch's bumble bee.

Monarch Butterfly

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect monarch butterflies, either directly or

through habitat modifications, and impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-10**, **AQ-SC3**, **AQ-SC4** and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, **MM BIO-5**, and **MM BIO-10**.

Jurisdictional Project Components

The project site is outside the monarch butterfly's known overwintering range and does not contain suitable overwintering habitat (i.e., tree groves). Larval host plants (i.e., milkweed) were not observed during surveys in 2023 or 2024. Given that the monarch butterfly is a foraging generalist and may forage on available flowering plants in the vicinity of the project site there is a low potential for the species to occur.

Site mobilization and construction activities such as grading, excavation, and soil stockpiling could temporarily disturb or remove low-quality foraging habitat. However, these activities are not expected to impact individual monarch butterflies, as larval host plants and suitable roosting habitat are absent from the project disturbance area. As a result, no direct impacts to monarch butterflies are anticipated. In addition, removal of orchard habitat and subsequent restoration of the gen-tie corridor and gen-tie laydown area would convert approximately 21.6 acres of unsuitable orchard habitat to potentially suitable foraging habitat. This restoration would result in a net increase of approximately 5.7 acres of habitat that could be used by monarch butterflies if they occur in the project site in the future.

To avoid and minimize impacts during site mobilization and construction, CEC staff proposes implementation of general mitigation measures, including COCs **BIO-1** through **BIO-7**. In addition, to avoid impacts to monarch butterflies, CEC staff proposes COC **BIO-10** (Monarch Butterfly Avoidance and Minimization Measures) which would require a qualified biologist to survey for monarch larval host plants within 2 days before vegetation removal and to protect any occupied host plants until the breeding season has concluded or the CPM approves plant removal. The applicant provided a revegetation plan that includes a seed mix that includes native and naturalized nectar-producing forbs and grasses that can provide general foraging resources for monarch butterflies. This revegetation plan has been incorporated into CEC staff's proposed COC **BIO-8** (Vegetation Restoration Plan).

In addition, impacts from fugitive dust would be mitigated by implementation of **AQ-SC3** (Construction Fugitive Dust Control), which would include watering roads and/or stabilizing them with soil binders. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction. **AQ-SC4** (Dust Plume Response Requirement) would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits.

With implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-10**, **AQ-SC3**, and **AQ-SC4**, impacts to monarch butterflies would be less than significant.

Non-Jurisdictional Project Components

Site mobilization and construction activities for the off-site transmission line interconnection components would occur entirely within disturbed agricultural fields, roadside shoulders, and existing utility corridors. These areas do not support larval host plants (milkweed species) or suitable roosting habitat, and only low-quality, nonnative nectar sources are present. Disturbance is in an already degraded right-of-way.

As part of the standard PG&E Construction Measures, staff recommend that PG&E implement **MM BIO-1** (Annual Training) and **MM BIO-2** (Standard Construction Practices).

The standard PG&E Construction Measures did not specifically address monarch butterfly. However, direct impacts to monarch butterfly from vegetation trimming or removal could still occur without additional mitigation, if present. To further reduce direct impacts on this species, staff recommend **MM BIO-4** (General Impact Avoidance and Minimization Measures), **MM BIO-5** (Biological Monitor During Construction), and **MM BIO-10** (Monarch Butterfly). **MM BIO-10** requires a qualified biologist to conduct pre-construction surveys prior to site mobilization and/or construction-related vegetation trimming or removal and to survey all areas of potentially suitable habitat for monarch larval host plants. If monarch eggs, larvae, or pupae are detected, the DB would establish an avoidance area around the occupied host plant and ensure that vegetation removal does not occur until the individuals have completed development or the DB determines that work can proceed without affecting monarch life stages.

Implementation of CEC staff's recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, **MM BIO-5**, and **MM BIO-10** would ensure impacts to monarch butterflies and their host plant are reduced to less than significant.

Operation

No Impact. Based on the analysis below, the operation of proposed project would not result in direct or indirect impacts to monarch butterflies or their habitat.

Non-Jurisdictional Project Components

Operational activities associated with the project would not result in impacts to monarch butterflies. After construction is completed, operational activities would be limited to routine inspections, equipment monitoring, and periodic maintenance, none of which would involve ground disturbance or removal of floral resources. Project operations would occur within the previously disturbed and developed areas, and no additional vegetation clearing or soil disturbance would occur. Because habitat conditions would not change during operation, and no new impacts on potential foraging or nesting habitat would occur, operational activities would not impact monarch butterflies.

Special Status Amphibians

No special status amphibians are expected to occur within the project study area.

Special Status Reptiles

Northwestern Pond Turtle (*Actinemys marmorata*)

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect northwestern pond turtle either directly or through habitat modifications, and impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, and **BIO-11**, **HAZ-1**, **AQ-SC3**, **AQ-SC4**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, and **MM BIO-5**.

Jurisdictional Project Components

Northwestern pond turtles are documented in the region, with 17 occurrences within 10 miles of the project site. The nearest record, from 2016, is located approximately 1.5 miles southwest of the project site in a partially concrete-lined and riprapped flood control channel (CDFW 2026a). These records confirm that the species occurs in the region and may use modified aquatic features. Most aquatic features within the project site provide marginal habitat for northwestern pond turtles due to limited hydrology, artificial channelization, and surrounding agricultural disturbance. However, Gibson Canyon Creek, which crosses a 0.932-acre portion of the project site, may provide intermittent suitable aquatic habitat when water is present, particularly for movement or short-term refuge.

The project footprint would avoid direct impacts to Gibson Canyon Creek and other delineated aquatic features. Site mobilization and construction activities would occur entirely within agricultural areas (fallow fields and orchards) that do not provide suitable aquatic or upland habitat for northwestern pond turtles. Because the creek would be avoided and no in-channel work is proposed, direct impacts to northwestern pond turtles are not anticipated.

To avoid and minimize impacts during site mobilization and construction, CEC staff proposes implementation of general mitigation measures, including COCs **BIO-1** through **BIO-7**. In addition, to avoid impacts to northwestern pond turtles, CEC staff proposes that COC **BIO-11** (Northwestern Pond Turtle Avoidance and Minimization Measures), which requires pre-construction surveys within 48 hours of ground disturbance and CPM-approved avoidance, nest protection, or relocation measures if turtles or nests are detected.

Non-Jurisdictional Project Components

Upland habitat adjacent to the creek is generally unsuitable due to agricultural and developed land uses. However, annual grasslands near the PG&E Vaca-Dixon Substation could provide dispersal or nesting habitat. Two seasonal wetlands mapped within the PG&E Vaca-Dixon Substation do not hold water long enough for northwestern pond turtle use and lack connectivity to perennial or semi-perennial aquatic habitat. Gibson Canyon Creek within the project site provides little to no natural bank structure for basking or refugia, hydrology is intermittent and adjacent uplands are disturbed, compacted and maintained. The PG&E Vaca-Dixon Substation consists of gravel pads, fencing, and active utility infrastructure. As a result, habitat suitability for northwestern pond turtles is low, and the species is not expected to occur. Therefore, direct or indirect impacts from construction of the off-site transmission line interconnection components are not expected to occur.

As part of the standard PG&E Construction Measures, CEC staff recommend **MM BIO-1** (Annual Training), and **MM BIO-2** (Standard Construction Practices). However, direct impacts to northwestern pond turtles could still occur without additional mitigation, if present. To further reduce direct impacts on this species, staff recommend **MM BIO-4** (General Impact Avoidance and Minimization Measures), and **MM BIO-5** (Biological Monitor During Construction) to avoid impacts to northwestern pond turtle.

With implementation of CEC staff's recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, and **MM BIO-5** impacts to northwestern pond turtle and its habitat would be reduced to less than significant.

Operation

No Impact. Based on the analysis below, the operations associated with the proposed project would not result in direct or indirect impacts to northwestern pond turtle or its habitat.

Jurisdictional and Non-Jurisdictional Project Components

During operation, project activities would be limited to infrequent access on existing roads. After construction is completed, project components would be limited to routine inspections, equipment monitoring, and periodic maintenance, none of which would involve ground disturbance or impacts to aquatic features. Therefore, no impacts to northwestern pond turtle or its habitat would occur during operation.

White-Tailed Kite and Swainson's Hawk

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect white-tailed kite and Swainson's hawk, either directly or through habitat modifications. Impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-15**,

BIO-16, **BIO-20**, **HAZ-1**, **AQ-SC3**, **AQ-SC4**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-3**, **MM BIO-4**, and **MM BIO-5**.

Jurisdictional Project Components

Suitable nesting habitat for white-tailed kite and Swainson's hawk is limited to a small number of tall, mature trees located near rural residences within approximately 0.5-mile of the project site. These off-site trees would not be removed or otherwise disturbed by project activities. The BESS site consists of disturbed, previously cultivated land that does not support trees. Trees occurring along the proposed gen-tie ROW consist primarily of orchard trees. Due to their uniform structure, intensive management, and frequent disturbance, orchard trees generally provide low-quality nesting habitat for large raptors. While these trees could theoretically support a nest, they are far less suitable than the mature residential trees located near the project site but outside of the project footprint.

Direct impacts to these species include mortality during site mobilization or construction activities, degradation of foraging habitat, disturbance due to increased levels of human presence, noise, vibration, fugitive dust, habitat loss or fragmentation. Indirect impacts include temporary or permanent displacement, and disruption of movement. However, species that are less able or inclined to disperse (such as nesting birds and raptors) may remain near the site and experience temporary adverse impacts. Large aerial foragers, such as white-tailed kite, Swainson's hawk and other raptors, may have reduced foraging opportunities on the project site during construction of the facility. The loss of foraging habitat for listed species would typically be considered a significant impact, absent mitigation, through the removal of vegetation that could support food and prey species.

Construction of the project would result in the permanent conversion of approximately 16.1 acres and temporary disturbance of approximately 24.4 acres of Swainson's hawk and white-tailed kite foraging habitat. Permanent impacts would occur within the BESS site, which is located in unincorporated Solano County, while temporary impacts would occur within both the BESS site and the PG&E Vaca-Dixon Substation area, which is located within the City of Vacaville. Although removal of orchard trees within the gen-tie corridor may create more open ground that could improve foraging conditions for raptors, this change is incidental to project construction and is not considered mitigation.

To address habitat losses, the applicant initially proposed to coordinate with the Solano Land Trust (SLT) to provide up to 40 acres of compensatory mitigation through an in-lieu fee program, with mitigation lands protected in perpetuity under SLT-held conservation easements (TT 2025b). The applicant stated that Swainson's hawk mitigation acreage would not be combined or stacked with agricultural mitigation because the acreage requirements and long-term management restrictions would differ substantially. SLT representatives indicated that an in-lieu fee approach would allow

SLT to assemble a larger, more impactful regional avian mitigation project funded by multiple contributors.

However, CEC staff, in coordination with CDFW, determined that the SLT in-lieu fee proposal would not satisfy the requirements of the City of Vacaville Municipal Code Chapter 14.28, which mandates that agricultural and avian foraging habitat mitigation fees be paid to the City of Vacaville, not directly to SLT, and the materials provided by SLT do not demonstrate compliance with the City's ordinance-based mitigation program. For these reasons, staff does not agree with the applicant's proposed mitigation strategy for Swainson's hawk foraging habitat.

To address the permanent loss of Swainson's hawk foraging habitat and ensure consistency with applicable regulatory requirements and conservation strategies, staff, in coordination with CDFW, propose COC **BIO-20** (Swainson's Hawk Foraging Habitat Compensatory Mitigation). This condition would require compensatory mitigation for permanent habitat loss through placement of a conservation easement and funding of an endowment to support long-term management of the proposed mitigation lands.

To comply with COC **BIO-20** and to ensure consistency with both the draft Solano HCP conservation strategy and the 1994 CDFW Staff Report, the project owner would be required to provide compensatory mitigation for the 16.1 acres of permanent habitat loss at a 1:1 ratio through placement of a conservation easement and funding of an endowment for long-term management of the mitigation site. If the project owner proposes to satisfy COC **BIO-20** through purchase of conservation or mitigation bank credits, the project owner shall provide biological justification demonstrating that the selected bank provides appropriate habitat value and service area coverage. If credits are unavailable within Solano County or within the applicable bank service area, and the project owner seeks to purchase Swainson's hawk foraging habitat credits from a bank located outside the service area, compensatory mitigation shall be provided at a minimum 2:1 ratio for permanent impacts (based on 16.1 acres). The project owner shall be required to demonstrate that no suitable in-service area credits are available prior to approval of any out-of-service area purchase.

To address temporary impacts to foraging habitat, CEC staff, in consultation with the CDFW, proposes COC **BIO-8** (Vegetation Restoration Plan), which requires the project owner to develop and implement a Vegetation Restoration Plan to restore approximately 24.4 acres of temporarily disturbed habitat within one year following completion of site mobilization and construction, with monitoring and maintenance conducted until performance standards are achieved.

Implementation of general mitigation measures, including staff's proposed COCs **BIO-1** through **BIO-7,** would further avoid and minimize impacts to raptors, including Swainson's hawk and white-tailed kite. These COCs are designed to educate workers of the presence and sensitivity of wildlife that may occur in the project area; provide limitations on the work that may occur during the breeding season; reduce or control

fugitive and vehicle speeds; monitoring construction to reduce direct wildlife mortality; and the control of noxious weeds.

Furthermore, CEC staff proposes the following species-specific conditions, which also incorporate mitigation measures proposed by the applicant, as appropriate. Species-specific conditions are warranted because Swainson's hawk and white-tailed kite are state-listed or fully protected raptors with heightened sensitivity to disturbance during the nesting season, and CDFW recommends species-specific survey protocols and larger no-disturbance buffers for these raptors compared to other nesting birds. These include COC **BIO-12** (Nesting Bird Avoidance and Minimization Measures), which establishes requirements for pre-construction surveys, preparation of a Nesting Bird Management Plan (NBMP), and implementation of avoidance buffers to protect active nests during the nesting season. In addition, **BIO-15** (Swainson's Hawk Surveys and Nest Protection Buffers) and **BIO-16** (White-Tailed Kite Nesting Surveys and Nest Protection Buffers) require species-specific surveys and establishment of no-disturbance buffers of up to 0.5 mile around active nests during the nesting season. Under these conditions, a qualified biologist with adequate experience surveying for Swainson's hawk, approved under COC **BIO-1** and/or **BIO-3**, would conduct the required pre-construction surveys, establish appropriate avoidance buffers, and avoid project activities within 0.5 mile of an active nest during the nesting season. The qualified biologist would also provide monitoring, as necessary, if nesting birds are present. The NBMP would outline survey methodologies, monitoring requirements, and buffer distances to ensure protection of active nests.

To address additional impacts during site mobilization and construction. Staff proposes COCs **HAZ-1**, **AQ-SC3**, and **AQ-SC4** which would ensure proper hazardous materials containment, reduction of fugitive dust, and the presence of a dust monitor during construction, further minimizing potential impacts on biological resources.

With implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, **BIO-8**, **BIO-12**, **BIO-15, BIO-16, BIO-20**, **HAZ-1**, **AQ-SC3**, and **AQ-SC4**, impacts to white-tailed kites and Swainson's hawk would be reduced to less than significant.

Non-Jurisdictional Project Components

White-tailed kite were observed foraging and perching within the 0.5-mile survey buffer during the 2023 raptor surveys. Remnant grasslands, fallow agricultural fields, and patches of non-native trees along the I-80 corridor provide suitable foraging and nesting habitat for the species. Swainson's hawks were also observed nesting within 0.5-mile of the project study area during 2023 surveys. Two active nests were documented in mature trees near the PG&E Vaca-Dixon Substation. One nest is located between the sub-station and the on-ramp of I-80 approximately 0.2 miles from proposed gen-tie disturbance areas. Large mature scattered trees, utility towers, adjacent farmland, and annual grasslands surrounding the project study area provide suitable nesting and foraging habitat for the species.

PG&E has not requested take coverage for Swainson's hawk, therefore the project must avoid impacts to Swainson's hawk by conducting all work outside the nesting season, consistent with **MM BIO-3**, or by implementing a 0.5-mile construction avoidance buffer around any active nests until they are confirmed inactive by the DB and/or Biological Monitor. Although not typical nesting sites, white-tailed kites and Swainson's hawk could nest on electrical transmission towers located throughout the project area. Nonnative annual grassland near the PG&E Vaca-Dixon Substation and surrounding agricultural fields could provide abundant prey for raptors. Direct impacts to these species could include construction-related mortality, degradation of foraging habitat, disturbance due to increased levels of human presence, noise, vibration, fugitive dust, habitat loss or fragmentation. Indirect impacts include temporary or permanent displacement, and disruption of movement.

The loss of foraging habitat for listed species would be considered a significant impact, absent mitigation, through the removal of vegetation that could support food and prey species.

To avoid and minimize impacts during site mobilization and construction, and as part of the standard PG&E Construction Measures, CEC staff implementation of **MM BIO-1** (Annual Training), **MM BIO-2** (Standard Construction Practices), and **MM BIO-3** (Swainson's hawk). **MM BIO-2** requires that nests with eggs and/or chicks be avoided by contacting a Biologist, Land Planner, or the Avian Protection Program Manager for further guidance, and **MM BIO-3** requires that construction be scheduled outside of the nesting season to prevent disturbance to active nests. However, direct impacts to white-tailed kites and Swainson's hawks could still occur without additional mitigation, if present. To further reduce direct impacts on these species, staff recommend **MM BIO-4** (General Impact Avoidance and Minimization Measures). These **MMs** are designed to educate workers of the presence and sensitivity of wildlife that may occur in the project area; provide limitations on work that may occur during the breeding season; require pre-construction surveys; reduce or control fugitive dust and vehicle speeds; monitoring construction to reduce direct wildlife mortality; and the control of noxious weeds.

With implementation of CEC staff's recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-3**, and **MM BIO-4** impacts to white-tailed kites and Swainson's hawk and their habitat would be reduced to less than significant.

Operation

Jurisdictional Project Components

Operational activities associated with the proposed project would not result in adverse impacts to white-tailed kite or Swainson's hawk. The BESS site would be fully fenced and would consist of disturbed operational facilities. Operational noise and activity levels would be minimal. The overhead gen-tie line corridor would remain unfenced, allowing continued wildlife movement, and surrounding agricultural fields and grasslands would continue to provide suitable foraging habitat for raptors and other

wildlife. Although nesting habitat does not occur within the operational footprint, if any birds were to attempt nesting on facility structures during operation, the project owner would implement COC **BIO-12** (Nesting Bird Avoidance and Minimization Measures), which requires protection of active nests and avoidance of disturbance until young have fledged.

Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, **BIO-12**, **BIO-15**, **BIO-16**, **AQ-SC3**, **AQ-SC4**, **HAZ-1**, and **WORKER SAFETY-1** would avoid or reduce operational impacts to white-tailed kite and Swainson's hawk, and the impacts would be less than significant.

Non-Jurisdictional Project Components

Operational activities associated with the proposed project would not result in adverse impacts to white-tailed kite and Swainson's hawk. Operational activities would be limited to infrequent access, routine inspections, vegetation management, and equipment monitoring within the gen-tie corridor and PG&E areas. Operational noise and activity levels would be minimal. The overhead gen-tie line corridor would not be fenced, allowing wildlife movement, and surrounding agricultural fields and grasslands would continue to provide suitable foraging habitat for raptors and other wildlife. Although a known Swainson's hawk nest occurs immediately outside the Vaca-Dixon Substation fence line, no nesting habitat occurs within the operational footprint, and operational activities would not introduce any new or greater noise, disturbance, lighting, or ground-disturbing activities than those already occurring in the vicinity of the Vaca-Dixon Substation, and therefore would not affect the nest. Therefore, impacts to white-tailed kites and Swainson's hawk and their habitat during operation would be less than significant.

Grasshopper Sparrow

Construction

Less Than Significant with Mitigation. Based on the analysis below, the proposed project would not substantially affect grasshopper sparrow, either directly or through habitat modifications. Impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-12**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, and **MM BIO-5**.

Jurisdictional Project Components

Grasshopper sparrow has been documented within a 10-mile radius of the project site, with the nearest record being approximately 5.6 miles southeast of the project site. This species is associated with open grasslands and lightly disturbed agricultural fields. Habitat within the project site is considered marginally suitable for foraging or nesting due to long-term agricultural disturbance. The gen-tie corridor does not provide suitable habitat for grasshopper sparrow. However, removal of the orchard would convert this

area to open ground that may, over time, provide additional foraging or nesting opportunities once revegetated.

Site mobilization and construction activities (i.e., grading, excavation, soil stockpiling, equipment movement) conducted during the breeding season could result in the displacement of breeding birds and the abandonment of active nests, as well as a disruption in foraging activity should this species occur. However, because suitable habitat for grasshopper sparrows is abundant in the surrounding areas, and because the project affects only a small portion of available habitat, impacts to potential foraging and nesting habitat are expected to be less than significant. In addition, temporary disturbance areas (i.e., laydown yards and temporary staging areas) would be revegetated and restored following construction, returning these areas to functional habitat conditions.

To avoid and minimize impacts to any nesting birds during site mobilization and construction, CEC staff proposes implementation of general biological protection COCs, including **BIO-1** through **BIO-7**. In addition, to avoid impacts to grasshopper sparrow, CEC staff proposes COCs **BIO-8** (Vegetation Restoration Plan), and **BIO-12** (Nesting Bird Avoidance and Minimization Measures). COC **BIO-12** requires the project owner to conduct pre-construction surveys for this and other avian species and if detected implement non-disturbance buffers to protect the nest. CEC staff proposes COCs **HAZ-1**, which would require a Spill Prevention Control and Countermeasure Plan, **AQ-SC3** (Construction Fugitive Dust Control), and **AQ-SC4** (Dust Plume Response Requirement) which would also be implemented.

With implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-12**, and **HAZ-1**, **AQ-SC3**, and **AQ-SC4** impacts to grasshopper sparrows would be reduced to less than significant.

Non-Jurisdictional Project Components

The vegetation within the project study area is disturbed, frequently maintained, and generally lacks characteristics needed for grasshopper sparrows to nest. The area likely provides limited marginal foraging habitat. Construction activities would create short-term noise and human activity that could discourage foraging. As part of the standard PG&E construction measures, **MM BIO-1** (Annual Training) and **MM BIO-2** (Standard Construction Practices) would provide general avoidance and minimization procedures during site mobilization and construction. **MM BIO-2** also requires that nests with eggs and/or chicks be avoided by contacting a Biologist, Land Planner, or the Avian Protection Program Manager for further guidance, and **MM BIO-3** (Swainson's Hawk) requires that construction not occur during the nesting season to avoid disturbance to active nests. Although **MM BIO-3** is written specifically for Swainson's hawk, the construction-timing restriction provides protection for all nesting birds, including grasshopper sparrow. With these measures, impacts to grasshopper sparrows and their habitat would be reduced to less than significant.

Operation

No Impact. Based on the analysis below, operational activities associated with the proposed project would not result in direct or indirect impacts to grasshopper sparrows.

Jurisdictional and Non-Jurisdictional Project Components

During operations, activities would be limited to infrequent access on existing roads. After construction is completed, project components would be limited to routine inspections, equipment monitoring, and periodic maintenance, none of which would involve ground disturbance or impacts to grassland features. Therefore, no operational impacts to grasshopper sparrows are expected.

Bald Eagle and Golden Eagle

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect bald eagles or golden eagles, either directly or through habitat modifications. With the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, and **BIO-13**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, **MM BIO-5**, and **MM BIO-7**, impacts would be less than significant.

Jurisdictional Project Components

The project site consists of fallow agricultural fields, annual grassland, ruderal areas, the SID canal, and a highly modified segment of Gibson Canyon Creek. These habitats may support small mammal prey and therefore provide limited, low-quality foraging habitat for bald eagle and golden eagle. The project site lacks preferred nesting substrates, such as cliffs, rock outcrops, or large mature trees. Although transmission towers occur in the broader vicinity, the likelihood of nesting on these structures is low due to the proximity of I-80, residential development, and other frequent disturbances. As a result, bald eagle and golden eagle presence within the project site is expected to be limited to occasional flyovers.

Direct impacts to eagles include the minor loss or degradation of marginal foraging habitat resulting from vegetation clearing, mowing, and ground disturbance. While transmission towers and trees within 1 mile of the project area could provide nesting habitat, no nests have been documented, and nesting in the immediate vicinity is considered unlikely.

The applicant proposed measures for a 660-foot no disturbance buffer. However, to comply with the BGEPA, CEC staff, in coordination with USFWS, determined a 1-mile (5,280-foot) nest protection buffer would be necessary through the breeding season starting on December 15, consistent with USFWS guidance for minimizing disturbance to nesting eagles (USFWS 2016). If there are no eggs or young as of April 15, the buffer could be safely removed. If eggs and young are present, the buffer shall be

maintained until August 31. Biological monitors shall not be substituted for disturbance buffers and CEC staff recommended that the project owner coordinate with the USFWS Migratory Bird Program to determine the best approach to bald eagle and golden eagle monitoring prior to commencing construction related activities. This approach would avoid inadvertent disturbance by duplicative monitoring efforts in the area.

To avoid and minimize impacts during site mobilization and construction, CEC staff proposes implementation of general biological protection COCs, including **BIO-1** through **BIO-7**, and proposes COC **BIO-13** (Bald and Golden Eagle and Nest Protection Buffers) which includes protection measures for both bald eagle and golden eagle, including pre-construction surveys within 30 days of the commencement of activities.

Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, and **BIO-13** would avoid or reduce impacts to foraging bald eagles and golden eagles to less than significant.

Non-Jurisdictional Project Components

Direct impacts to bald eagle and golden eagle include the loss or degradation of foraging habitat resulting from vegetation clearing or ground disturbance, and removal of vegetation, including mowing. Transmission towers and trees within 1 mile of the project area could provide nesting habitat; another potential direct impact to golden eagle is nest abandonment caused by project activities. PG&E has committed to conducting construction and ground-disturbing activities outside of the nesting season, which would avoid disturbance to active nests.

To avoid and minimize impacts during site mobilization and construction, as part of the standard PG&E Construction Measures, CEC staff recommend **MM BIO-1** (Annual Training) and **MM BIO-2** (Standard Construction Practices). **MM BIO-2** also requires that nests with eggs and/or chicks be avoided by contacting a Biologist, Land Planner, or the Avian Protection Program Manager for further guidance, and **MM BIO-3** (Swainson's Hawk) requires that construction not occur during the nesting season to avoid disturbance to active nests. Although **MM BIO-3** is written specifically for Swainson's hawk, the construction-timing restriction provides protection for all nesting birds, including bald and golden eagles. Staff recommend **MM BIO-4** (General Impact Avoidance and Minimization Measures), which includes APLIC-compliant design and installation of the gen-tie line to reduce electrocution and collision risk, as well as general biological resource protection measures during construction. In addition, staff recommend **MM BIO-7** (Golden Eagle), which requires coordination with USFWS if the species is found within a 1-mile radius of the project site. These measures are designed to educate workers on the presence and sensitivity of wildlife that may occur in the project area; provide limitations on the work that may occur during the breeding season; require inspection for wildlife under vehicles; reduce or control fugitive dust and vehicle speeds; monitor construction to reduce direct wildlife mortality; and control noxious weeds.

With implementation of CEC staff's recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-3**, **MM BIO-4**, and **MM BIO-7**, impacts to bald eagles and golden eagles would be reduced to less than significant.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect bald eagle and golden eagle, either directly or through habitat modification, and impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, **BIO-13**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, and **MM BIO-7**.

Jurisdictional Project Components

Operational activities associated with the proposed project would not result in adverse impacts to bald or golden eagle. The BESS site would be fully fenced and would consist of disturbed operational facilities. Operational noise and activity levels would be minimal. A short segment of overhead gen-tie line would connect the BESS site to the off-site transmission alignment. Although the overhead gen-tie line would introduce a potential collision hazard, the risk to bald and golden eagles would be low because the span is short, highly visible, and does not occur within a major movement corridor. Surrounding agricultural fields and grasslands would continue to provide suitable foraging habitat for eagles and other wildlife. Although nesting habitat does not occur within the operational footprint, if any birds were to attempt nesting on facility structures during operation, the project owner would implement COC **BIO-13** (Bald and Golden Eagle and Nest Protection Buffers), which requires protection of active nests and avoidance of disturbance until young have fledged.

Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, **BIO-13**, **AQ-SC3**, **AQ-SC4**, **HAZ-1**, and **WORKER SAFETY-1** would avoid or reduce operational impacts to bald eagles and golden eagles, and the impacts would be less than significant.

Non-Jurisdictional Project Components

Operational activities associated with the proposed project would not result in adverse impacts to golden eagle. Operational noise and activity levels would be minimal. The portion of the overhead gen-tie line located within the orchard would remain unfenced, allowing continued wildlife movement, and the surrounding agricultural fields and grasslands would continue to provide suitable foraging habitat for eagles and other wildlife. Although this segment of the gen-tie line would introduce a potential collision hazard, the risk to bald and golden eagles would be low because the overhead span is short, highly visible, and does not occur within a major movement corridor or concentrated foraging area. Operation activities would be limited to infrequent access and routine inspections and would not introduce any new or greater noise, disturbance, lighting, or ground-disturbing activities beyond existing conditions in the vicinity of the

Vaca-Dixon Substation and orchard. Therefore, operational impacts to bald and golden eagles and their habitat would be less than significant.

Burrowing Owl

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect burrowing owls, either directly or through habitat modifications. Impacts would be less than significant with the implementation of CEC staff's proposed COCs **AQ-SC3**, **AQ-SC4**, **BIO-1** through **BIO-8**, **BIO-14**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, **MM BIO-5**, and **MM BIO-6**.

Jurisdictional Project Components

The western burrowing owl and their burrows were not detected in the project area. This species is known from the region and the project area supports suitable nesting and foraging habitat for this species. Although no western burrowing owl sign (e.g., feathers, whitewash, or pellets) was observed during surveys, the project site includes several features, such as mounded ditch banks, ground squirrel burrows, and piles of discarded concrete pipes, that are commonly used by this species and could provide suitable nesting or overwintering habitat for this species should they colonize the site prior to or during construction.

If present, direct impacts to western burrowing owls could include the loss or degradation of foraging habitat from vegetation clearing or ground disturbance, removal or disturbance of vegetation, and injury or mortality from collisions with vehicles or construction equipment. Other direct impacts include disturbance from increased noise levels from heavy equipment, increased vehicle traffic, increased human presence, exposure to fugitive dust, and human presence associated with the approximately 14-month construction schedule. Indirect impacts include the loss or degradation of foraging habitat due to the spread of noxious and invasive weeds, soil erosion, and altered plant community composition caused by construction of the proposed project.

Direct impacts to western burrowing owls or their nests would be significant without mitigation and would not comport with CESA requirements. Any action that results in direct impacts to burrowing owls that result in injury or mortality would constitute "Take" as defined by CESA. Because western burrowing owls or their sign have not been detected on the project site, the applicant has not requested CESA coverage for this species. Therefore, the project would be required to avoid all impacts to this species should western burrowing owls or their burrows be detected prior to or during construction.

Based on the survey data provided by the applicant, construction of the proposed project is not expected to disturb western burrowing owls or result in the loss of active burrows on the project site. However, because this species is known from the region and was detected during other surveys over 0.5 miles from the gen-tie line, it is possible that western burrowing owls could colonize portions of the site that provide suitable nesting or sheltering habitat or be encountered during construction. Should western burrowing owls be detected, the project owner would be required to avoid all impacts to this species.

The applicant provided a series of avoidance and minimization measures to reduce impacts to this species. CEC staff has incorporated these measures into CEC staff's proposed COC **BIO-14** (Burrowing Owl Avoidance Measures). This measure includes pre-construction surveys and the establishment of non-disturbance avoidance buffers consistent with the *California Department of Fish and Game Staff Report on Burrowing Owl Mitigation* (2012).

Impacts from fugitive dust would be mitigated by implementation of **AQ-SC3**, which includes watering roads and/or stabilizing them with soil binders. Dust suppressants would be durable non-toxic soil stabilizers, and many other activity specific control measures would be applied to reduce fugitive dust and to ensure activities do not create visible dust emissions during construction. **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits.

Table 5.2-7 identifies the restricted activity dates and required buffer distances that would be required should western burrowing owls or active western burrowing owl burrows be detected during site mobilization or construction. The buffer distances described in **Table 5.2-7** are based on the level of disturbance and the reproductive timing for western burrowing owls. These buffers would be implemented by the DB and/or Biological Monitor as identified in COC **BIO-14** if western burrowing owls are discovered during site mobilization and construction activities.

TABLE 5.2-7 WESTERN BURROWING OWL BUFFERS

Location	Time of Year	Level of Disturbance		
		Low[1]	Med[2]	High[3]
Nesting Sites	April 1–Aug 15	656 feet	1640 feet	1640 feet
Nesting Sites	Aug 16–Oct 15	656 feet	656 feet	1640 feet
Nesting sites	Oct 16–Mar 31	164 feet	328 feet	1640 feet

1 Low = Short duration, low-intensity activity involving light equipment, shallow below ground-work, and minimal noise or vibration, including shallow foundation excavation, concrete pouring, fence post establishment, brief work in any one location, laying fencing fabric, limited soil disturbance, and vehicular travel along established or designated alignments.
2 Medium = Moderate intensity activity that generates noticeable noise, vibration, or equipment movement for a short to moderate duration, including weed management, mowing, equipment staging or movement, brief drill-rig use for well development (if needed), and short-term work in one or a few locations.

3 High = High-intensity activity involving heavy equipment, extensive ground disturbance, and sustained noise or vibration for a moderate duration, including substantial soil disturbance, close to ground vegetation mowing, and large-scale equipment operation or material movement.

With the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-14, AQ-SC3**, and **AQ-SC4** potential impacts to burrowing owl and their habitat would be avoided or reduced to less than significant and would comport with CESA requirements.

Non-Jurisdictional Project Components

The project study area consists of disturbed agricultural fields, ruderal roadsides, compacted utility right-of-way, and developed areas adjacent to the PG&E Vaca-Dixon Substation. These areas provide low-quality foraging habitat for western burrowing owls and generally lack the structural features needed for nesting, such as ground squirrel burrow systems or undisturbed open grassland. Some isolated burrows or debris piles occur along the corridor, but these features are sparse, highly disturbed, and regularly maintained which reduces their suitability for nesting or overwintering. In addition, western burrowing owls or their sign were not detected in or adjacent to the project area.

Direct and indirect impacts to western burrowing owls would be the same as described for the Jurisdictional Project Components section.

As part of the standard PG&E Construction Measures, PG&E would implement **MM BIO-1** (Annual Training) and **MM BIO-2** (Standard Construction Practices). However, because these measures do not include avoidance and minimization measures specific to western burrowing owl, direct impacts to this species from construction activities could still occur if present. To address this gap and further reduce direct impacts on western burrowing owls, CEC staff recommends **MM BIO-6** (Burrowing Owl) which includes non-disturbance buffers if western burrowing owls or their burrows are detected in or near the project site. If impacts to the species are unavoidable, a qualified biologist would be required to coordinate with CPUC and CDFW to determine if take coverage is necessary.

In addition, the applicant recommended general impact avoidance measures to reduce impacts. CEC staff reviewed and incorporated these measures into CEC staff's recommended mitigation measures and enhanced them as necessary to reduce effects on western burrowing owl should they be present during site mobilization or construction activities. These include **MM BIO-4** (General Impact Avoidance and Minimization Measures) and **MM BIO-5** (Biological Monitor During Construction).

These measures are designed to educate workers about the presence and sensitivity of wildlife that may occur in the project area; provide limitations on the work that may occur during the breeding season; require inspection for wildlife under vehicles and in construction material such as open pipes and cavities; reduce or control fugitive dust

and vehicle speeds; monitor construction to reduce direct wildlife mortality; and control noxious weeds.

With implementation of CEC staff's recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, **MM BIO-5**, and **MM BIO-6**, impacts to burrowing owls during construction would be reduced to less than significant.

Operation

Less Than Significant Impact. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect western burrowing owl, either directly or through habitat modification, and impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-14, AQ-SC3**, and **AQ-SC4**.

Jurisdictional and Non-Jurisdictional Project Components

Direct and indirect impacts associated with operation and maintenance of the project would be substantially reduced relative to initial site mobilization and construction activities. Operational activities would be limited to infrequent site inspections, equipment monitoring, and routine maintenance conducted on existing improved or compacted surfaces. These activities would not involve vegetation removal, ground disturbance, or any expansion of the operational footprint. As a result, operational activities would not affect potential burrow sites, disturb nesting or overwintering habitat, or alter the availability of or quality of foraging habitat for burrowing owl. Occasional vehicle access and human presence would be comparable to existing baseline disturbance levels associated with existing agricultural practices and would not be expected to disrupt foraging or movement if western burrowing owls occur in the vicinity.

Impacts from the risk of collision and electrocution are addressed in the Common Birds section and would be less than significant with the implementation of **BIO-7** (General Impact Avoidance and Minimization Measures) which would require the use of visual markers to alert birds of the presence of the shield wire. Burrowing owl are a known local resident within the vicinity of the project, and this measure would reduce collision risk for resident birds. Therefore, operational impacts to burrowing owl would be less than significant.

Western Red Bat

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect special-status bats, either directly or through habitat modifications, and impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-7**, **BIO-17**, and

recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4, MM BIO-5**, and **MM BIO-8**.

Jurisdictional Project Components

There were no state or federally listed bat species detected during surveys and none are expected to occur in the project area. Western red bats, and other non-sensitive bats such as hoary bat and Yuma myotis have a moderate potential to occur in the gen-tie corridor due to the presence of orchard trees and proximity to Gibson Canyon Creek. Although their ecological requirements differ, all three species may use agricultural landscapes for foraging, day or night roosting where suitable trees are present particularly where riparian habitat is limited. Western red bat is a foliage-roosting species strongly associated with riparian woodlands but increasingly documented roosting in orchards where broadleaf canopy structure is available. Hoary bat is a solitary, tree-roosting species that typically selects tall, mature trees with dense canopy cover. In certain circumstances some orchard trees can provide low-quality but occasionally usable roosting substrate. Yuma myotis typically roosts in buildings, bridges, and other structures but may forage over orchards, canals, and open agricultural fields. While less dependent on trees, this species may use orchard edges or nearby structures for night roosting.

The most likely area to detect western red and other bats is near Gibson Canyon Creek. This drainage is located within foraging distance for all three species and bats commonly use edge habitat, hedgerows, irrigation ditches, and orchard rows in agricultural settings (Chung-MacCoubrey 1996).

The most likely risk to bats is during crepuscular and nighttime periods when work is conducted with the use of lights. Nighttime lighting could attract insects and pose a risk to bats from site mobilization and construction activities. There is some risk of encountering migrant bats or bats that may be attracted to night lighting or shelter in construction material or partially constructed structures. Other onsite practices that increase available water, such as mirror washing, dust control, and leaks/spills when filling water trucks may attract insects, in turn attracting bats to the site. Direct impacts could also occur during orchard removal in the gen-tie corridor, including injury or mortality of foliage roosting bats (western red bat and hoary bat), disturbance of torpid individuals during winter, displacement of solitary or maternity roosts and disturbance of night-roosting Yuma myotis if present in nearby structures or trees. Indirect impacts could occur through degradation of roosting or foraging habitat through dust and weed proliferation as well as noise and vibration from construction.

For the gen-tie corridor, the highest risk to western red bat and hoary bat occurs during their critical roosting period (April-October) when they use tree foliage for day roosting (BCI 2026). These solitary bats rely on broadleaf trees and shrubs and maternity colonies form in summer. The risk is highest for western red bat during the peak torpor period from December to February. Therefore, tree removal during the summer or peak

torpor period, without conducting pre-construction surveys, may cause direct mortality or displace individuals, especially females with young, or hibernating individuals.

To reduce impacts to bats, CEC staff has proposed the implementation of COC **BIO-17** (Bat Habitat Assessment and Surveys) which requires conducting pre-construction surveys prior to tree removal. CEC staff also proposed the implementation of COCs **BIO-1** through **BIO-7**. These conditions include information regarding the detection of these species and provide prescriptive measures should bats be detected or injured during construction. They also include specific conditions to search for and avoid nesting or roosting habitat in the unlikely event that bats are detected during construction. To reduce impacts from exposure to hazardous materials and improper herbicide use staff recommended COCs **HAZ-1** and **WORKER SAFETY-1**. Impacts from fugitive dust would be mitigated by implementation of staff's proposed COC **AQ-SC3** which includes watering roads and or stabilizing them with soil binders and COC **AQ-SC4** would require a qualified dust monitor during dust producing activities and require remedial measures if fugitive dust exceeds authorized limits. The implementation of these measures would reduce impacts to special status bats and their habitat to less than significant.

Non-Jurisdictional Project Components

As part of the standard PG&E Construction Measures, PG&E would implement the following measures to minimize direct and indirect impacts to western red bat and other bat species: Worker Environmental Awareness Training, Standard Construction Practices, Access, Trash, Refueling, Wildlife Entrapment, Wildlife Handling, Invasive Species, and Fugitive Dust Control. CEC staff reviewed these proposed measures and included MMs where appropriate to reduce potential environmental impacts. However, direct impacts to western red bat, from tree removal could still occur without mitigation, if present. To further reduce direct impacts on bat species, CEC staff recommends **MM BIO-8** (Bat Tree Removal Measures), which includes specific measures to avoid and minimize harm to roosting special-status bats during tree removal in the orchard. In addition, CEC staff recommends **MM BIO-5** (Biological Monitor During Construction) which would ensure that a biological monitor would be present onsite during all ground-disturbing activities or other activities with the potential to impact sensitive biological resources.

Implementation of all relevant standard PG&E Construction Measures and CEC staff's additional recommended MMs are recommended to address direct and indirect impacts to western red bat and other bat species from construction. CEC staff recommended implementation of **MM BIO-1, MM BIO-2, MM BIO-4, MM BIO-5**, and **MM BIO-8** to reduce impacts to less than significant.

Operation

Less Than Significant. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect western red bat or other bat

species, either directly or through habitat modifications, and impacts would be less than significant.

Jurisdictional Project Components

Operation activities would be limited to infrequent inspections, equipment monitoring, and routine maintenance conducted on existing improved or compacted surfaces. These activities would not involve vegetation removal, tree trimming, ground disturbance, or any expansion of the operational footprint. Work would be confined to areas within the fenced BESS facility or along existing access routes near the gen-tie line.

The BESS facility would introduce minimal, motion-activated, down-shielded security lighting for safety and site access. This lighting would be limited in duration and intensity, would not illuminate orchard habitat or riparian areas, and would not substantially create conditions that concentrate insects or increase bat foraging activity near equipment. Operation impacts to bats would therefore be less than significant.

Non-Jurisdictional Project Components

Operational activities would be limited to periodic inspections, equipment monitoring, and routine maintenance within the existing PG&E Vaca-Dixon Substation and along the gen-tie corridor. These activities would occur on previously disturbed or developed surfaces and would not involve vegetation removal, tree trimming, ground disturbance, or changes to lighting conditions in the orchard or riparian habitats adjacent to the corridor.

Because no suitable roosting habitat would be removed or modified during operation, and because activity levels would remain low and confined to the substation and existing gen-tie access routes, these activities would not affect western red bat, or other bat species that may forage or move through the broader agricultural landscape. Occasional vehicle access and human presence would be comparable to existing baseline conditions and would not disrupt foraging or movement patterns. Operational impacts to bats would therefore be less than significant.

American Badger

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not substantially affect American badger, either directly or through habitat modifications, and impacts would be less than significant with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8**, **BIO-18**, and recommended mitigation measures **MM BIO-1**, **MM BIO-2**, **MM BIO-4**, **MM BIO-5**, and **MM BIO-6**.

Jurisdictional Project Components

American badger is known to occur within the region and has a high potential to occur within the project site. The project site contains suitable prey base, friable soils and open ground. The nearest documented occurrence is approximately 3.1 miles to the southwest of the project site. However, no large, excavated badger dens or sign (i.e., distinctive tracks, scat, or freshly excavated soil mounds) were documented during field surveys conducted by the applicant.

Construction of the project could directly affect American badger and their habitat by the loss and degradation of habitat; disturbance of foraging, dispersal, and breeding activities; mortality due to crushing by foot traffic, vehicles, or heavy equipment; fugitive dust; ground borne vibration, exposure to hazardous materials; and increased noise and disturbance. American badgers can also be susceptible to collisions with vehicles along project access roads.

Indirect impacts to American badger include alterations of soils, reduction of prey base, and the spread of invasive plants and noxious weeds. These potential impacts would be considered significant and require mitigation. To reduce impacts to this species CEC staff proposed the implementation of COC **BIO-18** (American Badger Avoidance and Minimization Measures) which requires conducting pre-construction surveys and establishing non-disturbance buffers for the animals. In addition, the COC identifies specific information on survey methodologies, roles of designated staff, methods for den assessments and avoidance buffers, methods proposed for passive relocation efforts and den excavation for American badgers, and notification in the event of dead or injured American badgers.

CEC staff also proposes implementation of COCs **BIO-1** through **BIO-8**. COC **BIO-8** (Vegetation Restoration Plan) includes the restoration of disturbed habitat. The implementation of these measures would reduce impacts to American badger and their habitat to less than significant.

Non-Jurisdictional Project Components

The project study area consists of disturbed agricultural fields, ruderal roadsides, compacted utility right-of-way, and developed areas adjacent to the PG&E Vaca-Dixon Substation. These areas provide lower-quality foraging and dispersal habitat for American badger and generally lack friable soils, extensive ground squirrel burrows, and undisturbed open space that supports denning. No badger signs or dens were observed during surveys.

Site mobilization and construction activities (i.e., trenching, minor grading, and temporary work areas) could result in temporary disturbance to marginal foraging habitat, short-term displacement of individuals if a transient badger were moving through the area, and potential disturbance or collapse of burrows, if any small burrows are present within the work area.

To avoid and minimize impacts to American badger during site mobilization and construction CEC staff recommends **MM BIO-1** (Annual Training) and **MM BIO-2** (Standard Construction Practices). To further avoid and minimize impacts and reduce direct impacts on this species, CEC staff recommends **MM BIO-4** (General Impact Avoidance and Minimization Measures) and **MM BIO-5** (Biological Monitor During Construction). In addition, the standard PG&E Construction Measures did not specifically address American Badger or its habitat. Therefore, CEC staff recommends **MM BIO-6** (Burrowing Owl and American Badger) which requires pre-construction surveys of all proposed disturbance areas including a 500-foot buffer, where legally accessible. This measure also includes non-disturbance buffers if American Badger are found within or near the project site.

These MMs are designed to educate workers on the presence and sensitivity of wildlife that may occur in the project area; provide limitations on the work that may occur in proximity to known American badger burrows; require inspection for wildlife under vehicles; reduce or control fugitive dust and vehicle speeds; monitoring construction to reduce direct wildlife mortality; and control noxious weeds.

With implementation of CEC staff's recommended mitigation measures **MM BIO-1, MM BIO-2, MM BIO-4, MM BIO-5**, and **MM BIO-6**, impacts to American badger would be reduced to less than significant.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the operations associated with the proposed project would not substantially adversely affect American badger, either directly or through habitat modifications, and impacts would be less than significant.

Jurisdictional and Non-Jurisdictional Project Components

Operational activities would be limited to infrequent inspections, equipment monitoring, and routine maintenance conducted on existing improved or compacted surfaces. These activities would not involve vegetation removal, ground disturbance, or any expansion of the operational footprint. Work would be limited to areas within the fenced BESS or near the new gen-tie line. Occasional vehicle access and human presence would be comparable to existing baseline conditions in the agricultural and utility landscape and would not disrupt foraging or movement if a transient badger were to occur during operations or maintenance activities.

Thermal Runaway and BESS Fires

Concern has been raised that if the BESS facility were to catch fire, emissions from the fire could contaminate nearby land. For a detailed discussion on fire protection and toxic air contaminants see **Section 4.4, Worker Safety and Fire Protection, Section 5.1, Air Quality**, and **Section 5.10, Public Health**. As detailed in these sections, the project would contain multiple safety and fire prevention systems which

would reduce the likelihood of a fire event starting or propagating to a catastrophic level. CEC staff also conducted an analysis of the potential upset and malfunction scenario for the proposed project as a worst-case scenario, which is presented in **Appendix D, Dispersion and Frequency Analysis**.

Potential impacts from a BESS fire on special status plant and wildlife species could occur from smoke and fine particles contaminating habitat and water sources (Claassen et al. 2024). Impacts could include risks from chemical exposure, smoke inhalation, soil and water contamination, mortality, and habitat degradation. A BESS fire would be expected to pose a high risk to special status species if the smoke plume deposits chemicals in the project area for species with limited ranges, species that forage on plants that would contain harmful chemicals, and species that rely on water sources that could concentrate harmful chemicals should a fire occur. Fossorial species could be exposed to contaminated soil when burrowing.

Chemicals from firefighting runoff can contaminate forage and water, while noise and human activity may disrupt critical behaviors for special status species such as foraging or nesting. Soil contamination and habitat degradation in adjacent areas may also persist long after the fire event. Post fire clean up or soil sampling could result in disturbance to burrows and animals in adjacent habitat and contaminated spoils could transport dust far from the initial source of the fire. To reduce these impacts the applicant has proposed a series of mitigation measures to reduce fire risk, contain BESS fires, and ensure access to local firefighting personnel via a Fire Protection and Prevention Plan which would contain standard practices to minimize the potential for fires during construction.

Per **Section 4.4, Worker Safety and Fire Protection**, CEC staff proposes COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** which would require Fire Management and Prevention Plans for construction and operation, **WORKER SAFETY-7** and **WORKER SAFETY-8** which include several actions to reduce the effects of accidents related to the BESS and require fire responder training for BESS fires. In addition, per **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire,** CEC staff propose COC **HAZ-1** that would require a Hazardous Materials Business Plan and a Spill Prevention Control and Countermeasure Plan, and **HAZ-9** would require a Sampling and Analysis Plan (SAP) that requires sampling surface water and groundwater (as applicable) and surface soil following any BESS fire incident. Additionally, **HAZ-9** includes water quality sampling to identify constituents in any firefighting water used to extinguish the fire and ensure that the appropriate actions are taken for water disposal or treatment after the fire. To further reduce and manage the risk of BESS fires to biological resources CEC staff proposed COC **BIO-21** which includes soil testing and remedial actions including pre- and post-fire ecological monitoring, runoff containment, and restrictions on cleanup activities during sensitive biological periods. See **Section 4.4, Worker Safety and Fire Protection** and **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire** for further information.

With implementation of CEC staff's proposed COCs **BIO-1** through **BIO-8, BIO-21, WORKER SAFETY-1, WORKER SAFETY-2, WORKER SAFETY-7, WORKER SAFETY-8, HAZ-1**, and **HAZ-9** impacts from a potential BESS fire would likely be reduced to less than significant.

b. Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, and regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?

Construction

Less Than Significant Impact. Based on the analysis below, the proposed project would not cause substantial adverse effects on any riparian habitat or other sensitive natural community. Although no riparian habitat or other sensitive natural communities are present, CEC staff proposed the implementation of COCs as a standard protective measure. CEC staff's proposed COCs include **BIO-1** through **BIO-7, BIO-19, BIO-21, HAZ-9, WATER-1, WORKER SAFETY-7, WORKER SAFETY-8**, and recommended mitigation measures **MM BIO-1, MM BIO-2, MM BIO-4**, and **MM BIO-5**. Therefore, impacts to riparian habitat or sensitive natural communities would be reduced to less than significant.

Jurisdictional Project Components

The SID canal is a partially concrete-lined, engineered water conveyance structure and does not support riparian habitat or sensitive natural communities. It is not considered riparian habitat or a sensitive natural community under CDFW or USFWS definitions. Potential impacts to the bed, bank, or channel of the SID canal that may occur during site mobilization and construction activities such as horizontal directional drilling, and any proposed CDFW Lake and Streambed requirements are addressed under Checklist Item (c).

In addition, regional and local planning documents, including the Solano County General Plan and CDFW's Natural Communities List do not identify this engineered feature as a sensitive natural community.

Construction of the proposed project would not result in direct impacts to the bed or bank of the SID canal. However, to install the underground duct banks to support the gen-tie line the project owner would bore under the SID canal using horizontal directional drilling (HDD) or another similar process. During HDD activities there is a possibility that drilling mud could escape and enter the canal in what is described as a frac-out. A frac-out is an unintended release of drilling fluid (typically bentonite-based mud) from the subsurface to the ground surface, waterbody, or along a subsurface pathway that can occur during HDD operations. It occurs when drilling fluid pressures exceed the fracture strength of the surrounding soil or bedrock, causing the fluid to migrate out of the intended bore path. Frac-outs can result in adverse impacts to

aquatic resources should they occur within a waterbody. The HDD and jack-and-bore crossings beneath the SID canal would maintain 10 to 11 feet of vertical clearance below the bottom of the channel and are not expected to alter the bed, bank, or channel. With implementation of standard frac-out prevention and response procedures, impacts to the SID canal are not anticipated. However, because the irrigation flows in the canal may be present during construction, CDFW recommended that the project owner submit a Lake and Streambed Alteration Agreement (LSAA) notification pursuant to Fish and Game Code section 1602. Under the Warren Alquist Act, the CEC has in-lieu permitting authority to issue an LSAA when project activities would result in impacts to waters regulated under Fish and Game Code section 1600 et seq. CEC staff coordinated with CDFW on recommended avoidance and minimization measures to address potential impacts from a frac-out. CEC staff has incorporated these measures into CEC staff proposed COC **BIO-19** (Lake and Streambed Equivalency Conditions). In addition, work near any state or CDFW jurisdictional waters would require the implementation of COC **WATER-1** which requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP).

To avoid and minimize potential impacts to lake and streambed resources during construction, including the SID canal and the approximately 0.932-acre segment of Gibson Canyon Creek, CEC staff has proposed implementation of general construction measures, including COCs **BIO-1** through **BIO-7**, which include worker environmental awareness training, pre-construction surveys, avoidance of aquatic features, and biological monitoring. In addition, CEC staff proposed the implementation of COC **BIO-19** (Lake and Streambed Equivalency Conditions) which provides specific monitoring and clean up requirements should a frac-out occur during HDD activities and to minimize impacts to the SID canal and Gibson Canyon Creek.

In the event of a BESS fire, impacts would be reduced by the implementation of **WORKER SAFETY-7** and **WORKER SAFETY-8** which include several actions to reduce the effects of accidents related to the BESS and require fire responder training for BESS fires. In addition, COC **HAZ-9** would require a soil and water sampling plan to ensure that information can be relayed to first responders in a timely manner. Additionally, water quality testing would be conducted prior to any disposal of water used for an incident. To further reduce and manage the risk of BESS fires to biological resources CEC staff proposed COC **BIO-21** (Post BESS Fire Monitoring and Management Plan) which includes soil testing and remedial actions including pre- and post-fire ecological monitoring, runoff containment, and restrictions on cleanup activities during sensitive biological periods.

Non-Jurisdictional Project Components

The project site occurs primarily within disturbed agricultural fields, ruderal roadsides, and mowed utility right-of-way. A segment of Gibson Canyon Creek traverses the PG&E Vaca-Dixon Substation property and a portion of the gen-tie corridor to the south of I-80. This portion of the creek is a highly modified, intermittent drainage that has been

straightened and maintained for flood control and utility protection. The channel supports sparse riparian vegetation and does not meet the definition of a sensitive natural community under CDFW or USFWS classifications. Regional and local planning documents, including the Solano County General Plan and CDFW's Natural Communities List, do not identify these modified features as sensitive natural communities.

In addition to the modified creek segment, two mapped seasonal wetlands totaling 0.076 acre occur within the PG&E Vaca-Dixon Substation property. These features support hydrophytic vegetation, including creeping wildrye (*Elymus triticoides*), curly dock (*Rumex crispus*), hyssop loosestrife (*Lythrum hyssopifolia*), and seaside barley (*Hordeum marinum*), and exhibited prevalent algal matting during surveys. These seasonal wetlands were delineated based on hydrophytic vegetation and primary hydrology indicators and are bound by upland nonnative annual grassland. Under the Cowardin classification system, these features would be considered palustrine, emergent wetlands.

Project activities within the project site are limited to trenching and underground conduit installation in previously disturbed uplands and do not involve ground disturbance within the mapped seasonal wetlands or the modified segment of Gibson Canyon Creek. No vegetation removal, grading, or equipment access is proposed within these features, and the project design avoids all wetland and drainage areas. In addition, transmission line installation would require stringing conductor over Gibson Canyon Creek. This activity would occur entirely above the channel and would not involve equipment entering the creek, vegetation removal within the riparian corridor, or ground disturbance along the banks. Standard construction practices, such as maintaining all equipment outside the channel, using elevated rollers or pullers, and implementing a no-drop zone over the creek would avoid the potential for debris, hardware, or conductors to fall into the drainage.

To avoid and minimize potential impacts to jurisdictional waters during construction, implementation of the standard PG&E Construction Measures and CEC staff's recommended mitigation measures would prevent indirect effects such as sedimentation, runoff, or inadvertent encroachment. CEC staff recommends implementation of **MM BIO-1** (Annual Training), **MM BIO-2** (Standard Construction Practices), **MM BIO-4** (General Impact Avoidance and Minimization Measures), and **MM BIO-5** (Biological Monitor During Construction). To avoid storm water from entering these features staff recommends initiating Regional Water Quality Control Board NPDES permitting per **MM WATER-1** and implementing an Erosion and Sediment Control Plan per **MM WATER-2**. With the implementation of these mitigation measures, the risk to water quality would be less than significant with mitigation and impacts to waters regulated by CDFW or the RWQCB would be reduced to less than significant or would not occur.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the operations associated with the proposed project would not have a substantial adverse effect on any riparian habitat or other sensitive natural community.

Jurisdictional Project Components

Operational activities within the project site would be limited to periodic inspections, equipment monitoring, and routine maintenance conducted on existing access routes and previously disturbed upland areas. These activities would not require vegetation removal, ground disturbance, or any expansion of the operational footprint. The project site includes fallow agricultural fields, ruderal grassland, and the partially concrete lined SID canal. None of these features would be affected during operations because all activities would occur outside the bed, bank, and channel of the drainage features. No changes to hydrology or sedimentation patterns would occur, and operational vehicle access would remain infrequent and comparable to existing agricultural and utility activity in the area. As a result, no adverse operational impacts on the SID canal, or other sensitive natural communities are anticipated, and impacts would remain less than significant.

Non-Jurisdictional Project Components

Operational activities within the project site would be limited to periodic inspections, equipment monitoring, and routine maintenance conducted on existing access roads and previously disturbed right-of-way. These activities would not require vegetation removal, ground disturbance, or any expansion of the operational footprint. The project site contains disturbed agricultural fields, ruderal roadsides, two small seasonal wetlands (0.076 acre), and a highly modified segment of Gibson Canyon Creek. None of these features would be affected by operational use because all activities occur in upland and previously compacted areas. Operational vehicle access would be infrequent and comparable to existing baseline utility activity, and no changes to hydrology, wetland function, or the modified creek channel would occur. As a result, no adverse operational impacts on riparian habitat, seasonal wetlands, or other sensitive natural communities are anticipated, and impacts would remain less than significant.

c. Would the project have a substantial adverse effect on state or federally protected wetlands (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

Construction

Less Than Significant Impact. Based on the analysis below, the proposed project would not substantially affect any state or federally protected wetlands. Construction would not occur within these areas and the implementation of CEC staff's proposed COCs would reduce or avoid impacts to state or federally protected wetlands.

Jurisdictional Project Components

An aquatic resources delineation was completed by the applicant on May 28, 2024. This delineation identified and mapped the full extent of aquatic resources throughout the project site that could be federal waters under the jurisdiction of USACE, non-wetland waters of the state under the RWQCB, or considered streambeds regulated by CDFW.

No state or federally protected wetlands are present within the project site. The project does span the SID canal, an engineered irrigation canal that conveys agricultural water and is regulated as waters of the state by CDFW and the RWQCB. As described under Checklist Item (b), site mobilization and construction activities would avoid project related impacts to the bed, bank, and channel of the SID canal. Horizontal directional drilling would occur beneath the SID canal to install electrical ducts but would maintain 10 to 11 feet of vertical clearance below the bottom of the canal. With the implementation of CEC staff's proposed COC **BIO-19** (Lake and Streambed Equivalency Conditions) the project would avoid and minimize the potential for frac-outs or other inadvertent disturbance. CEC staff's proposed COC **BIO-19** would require the development of a Frac-out Contingency Plan that includes measures to minimize the risk of a spill or inadvertent release of drilling fluids and includes specific requirements for cleaning and containing a spill should it occur. In addition, work near any state or CDFW jurisdictional waters would require the implementation of COC **WATER-1** which requires the development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). Because all work would occur outside jurisdictional waters and protective measures would be implemented, impacts would be considered less than significant.

Non-Jurisdictional Project Components

Federally protected wetlands do not occur within the project site for the transmission line interconnection. Two state-protected seasonal wetlands occur within the PG&E Vaca-Dixon Substation. However, these wetlands do not occur within the project disturbance footprint and would not be impacted during construction. A highly modified segment of Gibson Canyon Creek is also present in the project area, and this feature is regulated by CDFW and the RWQCB. However, site mobilization and construction activities would not occur within or adjacent to the creek and the project would avoid impacts to the seasonal wetlands and drainages. To avoid storm water from entering these features, CEC staff recommends initiating Regional Water Quality Control Board NPDES permitting per **MM WATER-1** and implementing an Erosion and Sediment Control Plan per **MM WATER-2**. With the implementation of these mitigation measures, the risk to water quality would be less than significant and impacts to waters regulated by CDFW or the RWQCB would be reduced to less than significant or would not occur.

Operation

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis, the operation associated with the proposed project would have no impact on any state or

federally protected wetlands with the implementation of COC **WATER-2**. Therefore, potential impacts would be less than significant with mitigation incorporated.

Jurisdictional Project Components

No wetlands occur within the project site, and no operational activities would alter hydrology or otherwise affect the SID canal, an engineered irrigation canal that is considered a water of the state and is regulated by CDFW and the RWQCB. Operational activities would avoid the SID canal, and no changes to hydrology, sedimentation, or channel condition would occur. As described in **Section 5.16, Water Resources**, the project owner would implement COC **WATER-2**. The Drainage, Erosion, and Sedimentation Control Plan (DESCP) would require monitoring stormwater events and associated BMPs during project operations. This condition would prevent off-site transport of sediment to CDFW or state protected waters. Therefore, impacts would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

Operational activities for the transmission line interconnection would not encroach upon or modify the two state-protected seasonal wetlands within the PG&E Vaca-Dixon Substation. A highly modified segment of Gibson Canyon Creek is considered a water of the state and is regulated by CDFW and the RWQCB. No operational disturbance, hydrological change, or maintenance activity would occur within or adjacent to these features. No impacts to wetlands or other jurisdictional waters would occur during operation.

d. Would the project interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of wildlife nursery sites?

Construction

Less Than Significant Impact. Based on the analysis below, project construction and operation could affect wildlife movement, wildlife corridors, or nursery sites, and impacts would be less than significant with the implementation of CEC staff's proposed COCs BIO-1 through BIO-7, BIO-12 through BIO-18, BIO-20, and recommended mitigation measures MM BIO-1 through MM BIO-10.

Jurisdictional Project Components

The project site occurs within a highly modified landscape along the I-80 corridor characterized by fragmented habitat, transportation infrastructure, and extensive agricultural and developed land uses. A functional network of connected wildlands is essential for maintaining wildlife movement and genetic exchange; however, multiple regional connectivity models indicate the project site does not function as part of any important wildlife movement corridor or linkage.

Regional conservation planning efforts, including the California Essential Connectivity Project, Areas of Conservation Emphasis (CDFW 2026b), and connectivity modeling (Penrod et al. 2001; Spencer et al. 2010) identify large natural habitat blocks and essential linkages across the greater Bay Area and Solano County. These models show that no wildlife movement corridors or linkages occur within the project site and the project vicinity is classified by CDFW as having limited connectivity opportunity (Category 1). The project site also lies outside essential connectivity areas, natural landscape blocks, and least-cost corridors modeled for regional wildlife movement. In addition, CDFW big game migration data show no evidence that the area functions as a movement corridor for deer or other large mammals.

Given the existing level of fragmentation in the project vicinity, local wildlife may disperse through the site opportunistically; however, the project would not introduce new barriers to movement beyond those already present in the surrounding agricultural and developed landscape. Field surveys also found no evidence of wildlife nursery sites, such as bird rookeries, bat maternity roosts, or other sensitive breeding areas within the project site.

Although the project design includes perimeter fencing around the BESS facility, the project site is not located within any recognized wildlife movement corridor or linkage, and wildlife movement through the area is already highly constrained by existing development and infrastructure, including the I-80 corridor and surrounding agricultural operations. The fence may limit opportunistic movement through the immediate site, but it would not introduce a new barrier to regional wildlife movement or ecological connectivity. Wildlife would continue to use existing movement pathways and habitat patches in the broader area. Additionally, wildlife would be able to avoid the project areas during site mobilization and noisy construction activities, further minimizing potential impacts.

Some foliage-roosting bat species are known to use orchard trees as day roosts or less commonly, maternity (nursery) roosts. However, the orchard trees within the project site are intensively managed and subject to regular disturbance, resulting in low suitability for maternity roosting. Field surveys conducted for the project did not identify any bat maternity roosts or other nursery sites within the orchard or elsewhere on the project site. Species-specific measures, such as pre-construction bat roost surveys associated with tree removal, are addressed in the special-status species section and are not required to reduce impacts related to wildlife movement or nursery sites under this section.

To avoid and minimize impacts during site mobilization and construction, CEC staff proposes implementation of general mitigation measures, including COCs BIO-1 through BIO-7 to ensure site mobilization and construction activities would be appropriately conducted and monitored to minimize or avoid impacts to wildlife species. In addition, CEC staff has proposed BIO-8 (Vegetation Restoration Plan), which would require the project owner to restore approximately 24.4 acres of temporarily disturbed habitat

following construction. CEC staff also proposes implementing the following conditions of certification (COCs) to avoid and minimize impacts on sensitive species during site mobilization and construction: COCs BIO-12 (Nesting Bird Avoidance and Minimization Measures), BIO-13 (Bald and Golden Eagle and Nest Protection Buffers), BIO-14 (Burrowing Owl Avoidance Measures), BIO-15 (Swainson's Hawk Surveys and Nest Protection Buffers), BIO-16 (White-Tailed Kite Nesting Surveys and Nest Protection Buffers), BIO-17 (Bat Habitat Assessment and Surveys), BIO-18 (American Badger Avoidance and Minimization Measures), and BIO-20 (Swainson's Hawk Foraging Habitat Compensatory Mitigation) which requires compensatory mitigation for permanent loss of Swainson's hawk foraging habitat through permanent protection and long-term management of Habitat Management lands.

Implementation of CEC staff's proposed COC **BIO-1** through **BIO-7, BIO-8, BIO-13** through **BIO-18**, and **BIO-20** during construction would reduce impacts to native resident or migratory wildlife species, including use of established wildlife movement corridors and nearby breeding or nursery areas, to less than significant.

Non-Jurisdictional Project Components

The site for the transmission line interconnection occurs within an agricultural and utility corridor landscape that is already highly fragmented by existing development, roads and ongoing agricultural operations. Regional connectivity models (CDFW 2026b; Penrod et al. 2001; Spencer et al. 2010) do not identify this area as part of any native resident or migratory wildlife movement corridor, linkage, or least-cost pathway. As a result, wildlife movement through this site is limited to localized, opportunistic use by common species rather than corridor-scale movement.

During field surveys, active Swainson's hawk nests were documented in the vicinity of the PG&E Vaca-Dixon Substation. The standard PG&E Construction Measures specify that PG&E would not conduct work within the Swainson's hawk nesting season (March 1 to September 15). CEC staff recommends **MM BIO-3** (Swainson's Hawk), which requires scheduling construction outside the nesting season to avoid disturbance to active nests. In addition, staff recommends pre-construction surveys for nesting birds be conducted prior to site mobilization and construction activities, including tree removal. By scheduling construction outside the nesting period, the project eliminates the potential to disrupt nesting behavior or impede the use of these nests as wildlife nursery sites. Because no work would occur during the sensitive breeding period and no nest trees would be removed, the project would not interfere with the use of Swainson's hawk nests or other avian nursery sites, nor would it impede wildlife movement through the project site.

Implementation of CEC staff's recommended mitigation measures **MM BIO-1** through **MM BIO-10** during construction would reduce impacts to native resident or migratory wildlife species, including use of established wildlife movement corridors and nearby breeding or nursery areas, to less than significant.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis, the operation associated with the proposed project would not substantially adversely affect wildlife movement, wildlife corridors, or nursery sites and impacts would be less than significant.

Jurisdictional Project Components

Operational impacts would be limited to routine inspections, equipment monitoring, and maintenance occurring entirely within the previously disturbed BESS site and associated access routes. No Swainson's hawk nests or other raptor nesting sites were documented within the project site during field surveys, and no vegetation removal or ground disturbance would occur during operations that could affect nesting habitat or wildlife nursery sites. Because operational activities are minimal, short-duration, and confined to an already developed and fenced facility, they would not impede wildlife movement or interfere with the use of any nearby nesting or nursery sites. Therefore, operational activities would not substantially interfere with wildlife movement or nursery use.

Non-Jurisdictional Project Components

Operational impacts for the transmission line interconnection would be limited to infrequent inspections, equipment monitoring, and routine maintenance conducted within existing disturbed right-of-way. These activities would not require vegetation removal, ground disturbance, or expansion of the operational footprint and therefore would not affect Swainson's hawk nest trees or other potential avian nursery sites in the broader area. Because operational activities are minimal, short-duration, and confined to previously disturbed access routes, they would not impede wildlife movement or interfere with the use of nearby Swainson's hawk nests or other nesting bird sites. Therefore, operational activities would not substantially interfere with wildlife movement or nursery use.

e. Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, construction and operation of the project would not conflict with any local policies or ordinances protecting biological resources with the implementation of CEC staff's proposed COCs **BIO-1** through **BIO-21**, and recommended mitigation measures **MM BIO-1** through **MM BIO-10**.

Jurisdictional Project Components

The proposed project would not conflict with any local plans, policies, and regulations protecting biological resources. The proposed project would be consistent with applicable federal and state plans, policies and regulations during construction and operation, as summarized in **Table 5.2-8**. As described in **Section 5.2.1**, the project site does not support protected trees or oak woodland, and CEC staff's proposed COCs incorporate avoidance, minimization, and construction best management practices consistent with local biological resource protection policies.

To address impacts from temporary disturbance, the applicant has proposed measures for the restoration of temporarily disturbed areas. CEC staff has incorporated these measures into proposed COC **BIO-8** (Vegetation Restoration Plan), which would require restoration of temporarily disturbed areas within one year of completion of offsite mobilization and construction activities, as well as continued monitoring and maintenance until all performance standards have been met. CEC staff also incorporated the applicant's proposed compensatory mitigation for permanent impacts into COC **BIO-20** (Swainson's Hawk Foraging Habitat Compensatory Mitigation) which would require the project owner to provide compensatory mitigation for permanent impacts to 16.1 acres at a 1:1 ratio through placement of a conservation easement and funding of an endowment for long-term management of the mitigation site. If the project owner proposes to satisfy **BIO-20** through purchase of mitigation bank credits, and if credits within Solano County or within the applicable service area are unavailable, out-of-service area Swainson's hawk foraging habitat credits may be used at a minimum 2:1 ratio based on 16.1 acres of impacts. The project owner shall demonstrate that no suitable in-service area credits are available prior to approval of any out-of-service area purchase.

CEC staff also proposes COCs, where applicable, to ensure the project would not conflict with any federal or state plans, policies, and regulations which are included in **Table 5.2-8**. With implementation of CEC staff proposed COCs **BIO-1** through **BIO-21** construction of the project would not conflict with any local policies or ordinances and impacts would be reduced to less than significant.

Non-Jurisdictional Project Components

Construction and operations activities proposed for the transmission line interconnection are not expected to conflict with any local, state, or federal plans, policies, and regulations protecting biological resources because PG&E would coordinate and comply with all applicable plans, policies, and regulations. In addition, PG&E would implement **MM BIO-1** through **MM BIO-10** and coordinate with applicable resource agencies, as necessary, to reduce impacts to less than significant.

f. Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Communities Conservation Plan, or other approved local, regional, or state habitat conservation plan?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the proposed project would not conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Communities Conservation Plan (NCCP), or other approved local, regional, or state habitat conservation plan. Impacts would be less than significant with the implementation of CEC staff's proposed COCs BIO-1 through BIO-21, and recommended mitigation measures MM BIO-1 through MM BIO-10.

Jurisdictional Project Components

The proposed project would not conflict with an adopted HCP, NCCP, or other approved conservation plan. No adopted HCP or NCCP applies to the project site. Although the project site is within the boundary of the Solano Multispecies Habitat Conservation Plan (Solano HCP); however, the Solano HCP has not been adopted. In addition, the project would not be a covered activity under the draft Solano HCP.

The applicant has proposed general impact avoidance and minimization measures to reduce construction related impacts to common and special-status wildlife. CEC staff reviewed these measures and, as appropriate, incorporated them into CEC staff's proposed COCs. These measures would meet or exceed local, state and federal guidelines and align with the draft Solano HCP. These include:

- Avoidance of direct impacts on sensitive habitats (the site consists of disturbed agricultural land, orchards, and developed/ruderal areas, none of which are designated as sensitive natural communities).
- Pre-construction surveys and species-specific avoidance protocols for special-status wildlife.
- Implementation of construction best management practices to avoid impacts on aquatic features, including setbacks from jurisdictional waters.
- Worker environmental awareness training, biological monitoring where required, and adaptive avoidance measures (AMMs) consistent with the draft Solano HCP's AMMs.
- Measures developed in coordination with CDFW and incorporated into CEC staff's proposed COCs.
- Compensatory mitigation for Swainson's hawk foraging habitat that is consistent with the conservation objectives and avoidance and minimization framework described in the draft Solano HCP. Therefore, the project would not conflict with implementation of the Solano HCP if adopted in the future.

Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-21** would ensure the project would not conflict with any adopted HCP, NCCP, or other conservation plan. With implementation of these proposed COCs, impacts would be less than significant.

Non-Jurisdictional Project Components

Construction and operation of the proposed transmission line interconnection would occur within PG&E's existing service territory and would involve the same types of activities evaluated in the Final PG&E Bay Area Operations and Maintenance Habitat Conservation Plan (BAHCP 2017). The BAHCP describes PG&E's routine construction, operations, and maintenance activities – including installation, replacement, and modification of electric transmission and distribution infrastructure, as "covered activities" for purposes of establishing avoidance, minimization, and compensatory mitigation measures for sensitive biological resources. However, the proposed project is not a covered activity under the BAHCP, and no incidental take authorization under the BAHCP applies to this project. PG&E nevertheless implements the plan's standard biological protection measures, and these measures are routinely used by regulatory agencies as the basis for impact avoidance and minimization during PG&E led site mobilization and construction activities.

The proposed gen-tie interconnection activities (e.g., trenching, conduit installation, structure placement, and temporary access within existing PG&E right-of-way (ROW)) fall within the types of site mobilization and construction activities described in the BAHCP. These activities are subject to PG&E's established biological resource protection procedures, including implementation of avoidance and minimization measures for special-status species, wetland and riparian buffers, invasive species controls, worker environmental awareness training, and species-specific reporting requirements. As a result, construction of the transmission line interconnection would be conducted in a manner consistent with the BAHCP's conservation framework and would not result in biological impacts beyond those anticipated for PG&E's routine covered activities.

Because the BAHCP provides a comprehensive suite of biological protection measures for PG&E site mobilization and construction activities, and because the proposed interconnection work is consistent with the types of activities evaluated in the plan, the transmission line interconnection would be considered consistent with PG&E's BAHCP. Implementation of standard PG&E Construction Measures included as CEC staff's recommended mitigation measures **MM BIO-1** to **MM BIO-10** would ensure that potential impacts to special-status species, jurisdictional waters, and other sensitive biological resources would be avoided or minimized to less than significant.

Operation

Less Than Significant Impact. Based on the analysis below, the operation of the project would not conflict with the provisions of any adopted HCP, NCCP, or other approved local, regional, or state habitat conservation plan and impacts would be less than significant.

Jurisdictional Project Components

There is no adopted HCP, NCCP, or other local, regional or state plans that apply to the project site. Although the project site is within the boundary of the Solano Multispecies Habitat Conservation Plan (Solano HCP); however, the Solano HCP has not been adopted. In addition, the project would not be a covered activity under the draft Solano HCP. Therefore, the project would not conflict with any such plans and impacts would be less than significant.

Non-Jurisdictional Project Components

Operational activities for the transmission line interconnection would occur within PG&E's existing ROW and consist of routine inspections, vegetation management, and equipment maintenance. These activities are consistent with the types of ongoing operations and maintenance actions described as covered activities in the PG&E Bay Area Habitat Conservation Plan (BAHCP 2017). The BAHCP was finalized in 2017, and PG&E implements the avoidance and minimization measures as standard biological protection practices. Because operational activities would not expand the disturbance footprint or introduce new habitat impacts and would be conducted under PG&E's established biological procedures, operational impacts on sensitive species and habitats would be less than significant.

5.2.2.3 Cumulative Impacts

Under CEQA, cumulative impacts are defined as past, present, and reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effects on biological resources to be potentially significant. The proposed project is in eastern Solano County, an area experiencing ongoing agricultural conversion, industrial development, and regional energy infrastructure expansion. This analysis considers biological resources within the Vacaville-Elmira region and the broader Solano County landscape, focusing on sensitive species, habitat connectivity, and ecosystem sustainability.

The geographic scope of this cumulative impact analysis includes areas that could support special-status wildlife, including Swainson's hawk, golden eagle, white-tailed kite, burrowing owl, and American badger among others. As shown in **Appendix A, Table A-1** and **Figure A-1**, existing, approved, pending, and proposed projects in the region that could combine with the proposed project to result in cumulatively considerable impacts include agricultural development and conversion projects, regional transmission and distribution upgrades, nearby industrial and logistics facilities, and other renewable energy or energy-storage projects within Solano County.

These cumulative projects contribute to ongoing habitat modification, fragmentation, and disturbance within the Vacaville-Elmira region, particularly affecting raptor foraging habitat, ground-dwelling mammals, and sensitive bat species. When considered in combination with these regional trends, the Corby BESS project would incrementally contribute to cumulative impacts through the permanent conversion of 16.1 acres of

foraging habitat and temporary disturbance of 24.4 acres during construction. Given the small project footprint relative to the extent of agricultural and disturbed lands in the region, and the absence of ongoing operational disturbance, the project's incremental contribution is limited.

Implementation of CEC staff's proposed COCs **BIO-1** through **BIO-21** and recommended mitigation measures for the non-jurisdictional project components, **MM BIO-1** through **MM BIO-10**, would reduce the project's incremental contribution to cumulative impacts. With these measures, the project would not make a cumulatively considerable contribution to regional biological resource impacts. The project's incremental effects are fully mitigated, and when viewed in the context of past, present, and reasonably foreseeable future projects in eastern Solano County, the project would not result in significant cumulative impacts to special-status species.

5.2.3 Project Conformance with Applicable LORS

Table 5.2-8 presents CEC staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the project would conform with LORS. As shown in this table, CEC staff concluded that the project would be consistent with all applicable LORS. The subsection below, "5.2.5 Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.2-8 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Federal Endangered Species Act (16 USC §§ 1531 et seq. and 50 CFR part 17.1 et seq.)	
Designates and protects federally threatened and endangered plants and animals and their critical habitat. Applicants for projects that could result in adverse impacts on any federally listed species are required to mitigate potential impacts in consultation with USFWS.	**Yes.** The proposed project would include COCs **BIO-1** through **BIO-21** to reduce impacts to any federally threatened or endangered plants or animals and ensure consistency with FESA.
Bald and Golden Eagle Protection Act (16 USC §§ 668 to 668c)	
Provides for the protection of the bald and golden eagle by prohibiting, except under certain specified conditions, the take, possession, and commerce of such birds. The 1972 amendments increased penalties for violating provisions of the Act or regulations issued pursuant thereto and strengthened other enforcement measures.	**Yes.** The proposed project would include COCs **BIO-1** through **BIO-7**, **BIO-8**, **BIO-12**, and **BIO-13** to protect bald and golden eagle by prohibiting take, possession, and commerce of such birds and ensure consistency with the BGEPA.
Migratory Bird Treaty Act (16 USC §§ 703 to 711)	
Makes it unlawful to take or possess any migratory nongame bird (or any part of such a migratory nongame bird as designated in the Act.	**Yes.** The proposed project would include COCs **BIO-1** through **BIO-8**, **BIO-12** through **BIO-16**, and **BIO-20** to reduce impacts to resident and migratory birds and ensure consistency with the MBTA.
Clean Water Act §§ 401 and 404 (33 USC §§ 1251 to 1376)	

TABLE 5.2-8 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Requires the permitting and monitoring of all discharges to surface water bodies. Section 404 requires a permit from the ACOE for a discharge of dredged or fill materials into waters of the U.S., including wetlands. Section 401 requires a permit from RWQCB for the discharge of pollutants. By federal law, every applicant for a federal permit or license for an activity that may result in a discharge into a California water body, including wetlands, must request state certification that the proposed activity will not violate state and federal water quality standards.	**Yes.** The project area includes Gibson Canyon Creek, an intermittent stream and two seasonal wetlands. No in-channel work would occur. The project would include COCs **WATER-1, WATER-2, HAZ-1, AQ-SC3, AQ-SC4, BIO-1** through **BIO-7**, and **BIO-19**, which provides conditions, such as installation of BMPs to control erosion and sedimentation, refueling requirements, spill prevention plan and weed control, would further reduce impacts to jurisdictional waters.
State	
California Endangered Species Act (Fish and Game Code, §§ 2050 to 2098)	
Species listed under this act cannot be "taken" or harmed, except under specific permit.	**Yes.** The proposed project would include COCs **BIO-1** through **BIO-21** to ensure that impacts to state-listed species are less than significant.
Fully Protected Species (Fish and Game Code, §§ 3511, 4700, 5050, and 5515)	
Lists animal species that are fully protected in California and states that these species may not be "taken" or possessed at any time and no provision of this code or any other law shall be construed to authorize the issuance of permits or licenses to take any fully protected species. However, California Senate Bill 147 (SB 147), passed in July 2023, authorizes CDFW to issue permits for the incidental take of fully protected species for certain projects including renewable energy.	**Yes.** Fully protected species with the potential to occur within the project area include the golden eagle, bald eagle, and white-tailed kite. The implementation of COCs **BIO-1** through **BIO-8, BIO-12, BIO-13**, and **BIO-16** would reduce impacts to less than significant and ensure compliance with Fish and Game Code sections 3511, 4700, 5050, and 5515.
California Migratory Birds Protection Act (Fish and Game Code, §§ 3503, 3503.5, 3513, and 3800)	
Makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any migratory bird.	**Yes.** The project would include COCs **BIO-1** through **BIO-8, BIO-12** through **BIO-16,** and **BIO-20** to reduce impacts to resident and migratory birds and ensure compliance with Fish and Game Code sections 3503, 3503.5, 3513, and 3800.
Furbearing Mammals (Fish and Game Code, §251.1 and Title 14, § 460)	
Contains regulations for taking furbearing mammals, including prohibiting the harassment or unapproved take of furbearing mammals, including San Joaquin kit fox and American badger.	**Yes.** The project would include COCs **BIO-1** through **BIO-8**, and **BIO-18** to reduce impacts to fur-bearing mammals, specifically American badger and ensure compliance with Fish and Game Code section 251.1 and Cal. Code Regs., Title 14, section 460.
Native Plant Protection Act (Fish and Game Code, § 1900et seq.)	
Designates state rare and endangered plants and provides specific protection measures for identified populations. The Act also prohibits take of rare and endangered native plants with exceptions for agricultural and nursery	**Yes.** The project would include COCs **BIO-1** through **BIO-8** to ensure plants are avoided and ensure compliance with Fish and Game Code, sections 1900 and following.

TABLE 5.2-8 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
operations, emergencies, or in proper coordination with CDFW under specific circumstances.	
Porter-Cologne Water Quality Control Act (California Water Code Division 7)	
Directs responsibility to RWQCBs for granting Waste Discharge Requirements (WDRs) or National Pollutant Discharge Elimination System (NPDES) permits for discharges to waters of the state. The Act also establishes water quality objectives to protect the beneficial uses of surface and groundwater resources.	**Yes.** The project owner would obtain the appropriate WDRs or NPDES permits through the CVRWQCB prior to impacting any jurisdictional features. The project would include COCs **WATER-1, WATER-2, HAZ-1**, and **BIO-19** to ensure compliance with water quality objectives.
California Lake and Streambed Alteration Notification/Agreement (Fish and Game Code, § 1602)	
Prohibits alteration of any water body meeting the CDFW jurisdictional requirements of the Fish and Game Code without the appropriate permits	**Yes.** The project owner would seek coverage for horizontal directional drilling under the Solano Irrigation District (SID) Canal which outfalls to Gibson Canyon Creek through the in-lieu permitting program to ensure compliance with Fish and Game Code, section 1602. The project would include COCs **BIO-1** through **BIO-7**. The additional implementation of COCs **BIO-8, BIO-19, WATER-1, WATER-2, and HAZ-1** which provides conditions, such as installation of BMPs to control erosion and sedimentation, refueling requirements, spill prevention and weed control, would further reduce impacts to these features.
Local	
Solano County General Plan	
Policy RS.P-1: Protect and enhance the county's natural habitats and diverse plant and animal communities, particularly occurrences of special status species, wetlands, sensitive natural communities, and habitat connections. Policy RS.P-4: Together with property owners and federal and state agencies, identify feasible and economically viable methods of protecting and enhancing natural habitats and biological resources. Policy RS.P-6: Protect oak woodlands and heritage trees and encourage the planting of native tree species in new developments and along road rights-of-way. Policy RS.P-71: Ensure that land use activities and development occur in a manner that minimizes the impact of earth disturbance, erosion and surface runoff pollutants on water quality.	**Yes.** The BESS site is located within unincorporated Solano County. The project owner would include COCs **BIO-1** through **BIO-21** to ensure compliance with the Solano County General Plan.
City of Vacaville General Plan	
Goal COS-1: Protect and enhance habitat for sensitive species and natural communities	**Yes.** Portions of the gen-tie alignment occur within the city of Vacaville. The project owner would

TABLE 5.2-8 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Policy COS-P1.5: Require new development proposals to provide baseline assessments prepared by qualified biologists. The assessment shall contain sufficient detail to characterize the resources on, and adjacent to, the development site. Policy COS-P1.6: Require that new development minimize the disturbance of natural habitats and vegetation. Require revegetation of disturbed natural habitat areas with native or non-invasive naturalized species. Policy COS-P1.12: Until the Solano Habitat Conservation Plan (HCP) is adopted, comply with all of the Avoidance, Minimization, and Mitigation Measures listed in the Draft Solano HCP. Policy COS-P1.13: Require that new development avoid the loss of special-status bat species as feasible.	include COCs **BIO-1** through **BIO-21** to ensure compliance with the City of Vacaville General Plan.
Solano Multi-Species Habitat Conservation Plan	
The Solano Multi-Species Habitat Conservation Plan (2012) proposes a regional approach for complying with endangered species regulations while accommodating future development and infrastructure needs across Solano County and part of Yolo County. Because the Plan has not been adopted, it does not impose regulatory requirements on the project. Although the Solano County General Plan encourages consistency with the draft Plan's mitigation framework, these policies serve as guidance rather than binding obligations.	
Vacaville Municipal Code Chapter 14.28 - Agricultural and Avian Foraging Habitat Impact Mitigation Program	
Chapter 14.28 – Agricultural and Avian Foraging Habitat Impact Mitigation Program	**Yes.** Portions of the gen-tie alignment occur within the city of Vacaville. The project would include COCs **BIO-1** through **BIO-8**, and **BIO-20**.
Solano County Code of Ordinances	
Chapter 31 – Watercourses and Drainage, addresses protection of watercourses, erosion control, and restrictions on altering channels.	**Yes.** The BESS site is located within unincorporated Solano County. The project would include COCs **AQ-SC3, AQ-SC4, WATER-1, WATER-2, HAZ-1,** and **BIO-1** through **BIO-8**, and **BIO-19** to reduce impacts to Gibson Canyon Creek and the SID canal.
Chapter 28 – Zoning Regulations (Biological Resource Policies), includes requirements for protecting sensitive habitats, wetlands, and special-status species during development, and tree and oak woodlands.	**Yes.** The BESS site is located within unincorporated Solano County. The project would include COCs **BIO-1** through **BIO-21** to ensure that impacts to threatened and endangered plants and wildlife and other sensitive biological resources are reduced and ensure compliance with the Solano County General Plan.

5.2.4 Conclusions and Recommendations

As discussed above, with implementation of CEC staff's proposed COCs, the project would have a less than significant impact related to biological resources and would conform with applicable LORS. CEC staff proposes adopting the conditions of certification as detailed in subsection "5.2.5 Proposed Conditions of Certification" below.

5.2.5 Proposed Conditions of Certification

BIO-1 Designated Biologist Selection The project owner shall assign at least one Designated Biologist (DB) to the project (multiple personnel may be required to ensure compliance with conditions of certification). The project owner shall submit the resume of the proposed DB, with at least three references and contact information, to the California Energy Commission Compliance Project Manager (CPM) for review and approval and to the California Department of Fish and Wildlife (CDFW) for review and comment. Resumes shall be submitted using the Biologist Resume DFW 820 form, or current form, unless an alternate format is approved by the CPM.

The DB must meet the following minimum qualifications:

1. Bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field;
2. Three years of experience in field biology or current certification of a nationally recognized biological society, such as The Ecological Society of America or The Wildlife Society; and
3. At least three years of field experience with biological resources found in or near the project area, or as specified below for listed species:

In lieu of the above requirements, the resume shall demonstrate to the satisfaction of the CPM that the proposed DB or alternate has the appropriate training and background to effectively implement the conditions of certification.

For work related to Swainson's hawk, the above qualifications shall also apply. In addition, the DB(s) shall have conducted at least two complete years of protocol-level Swainson's hawk surveys during which they have detected Swainson's hawk.

Verification: The project owner shall submit to the CPM resumes and any other relevant documentation for DB(s) approval at least 75 days prior to the start of site mobilization and/or construction-related ground disturbance activities. No site mobilization or construction related activities shall commence until a DB has been approved by the CPM.

If a DB needs to be replaced, the specified information regarding the proposed replacement must be submitted to the CPM at least ten working days prior to the

termination or release of the preceding DB. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval of a short-term replacement while a permanent DB is proposed to the CPM for consideration.

BIO-2 Designated Biologist Duties The project owner shall ensure that the DB performs the following during any site (or related facilities) mobilization, ground disturbance, grading, construction, operation, and decommissioning activities. The project owner may request approval from the CPM to terminate the DB's function during plant operation in writing and provide justification for the request. However, the project owner shall appoint a replacement DB at any time as directed by the CPM and shall ensure the same duties are performed during closure activities.

If no DB is available at any time during the life of the project (including the operation phase) and the CPM determines project-related actions may affect biological resources, the CPM may direct the project owner to assign a replacement DB, for short-term or long-term monitoring and reporting. The DB may be assisted by the approved Biological Monitor(s) but remains the primary contact for the project owner and CPM.

The Designated Biologist Duties shall include the following:

1. Advise the project owner's Construction and Operation Managers on the implementation of the biological resource conditions of certification;
2. Ensure that all biological resource conditions of certification are met and that all reporting standards for each biological resource condition of certification are completed and submitted to the CPM and any other regulatory agencies in compliance with specified timelines;
3. Consult on the preparation of the Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP) to be submitted by the project owner;
4. Be available to supervise other biological resource staff, conduct and coordinate mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as special status species or their habitat;
5. Ensure that all sensitive biological resource areas are flagged, delineated, or marked, and inspect these areas at appropriate intervals for compliance with regulatory terms and conditions;
6. Notify the CPM and CDFW of any observation of an unanticipated sensitive biological resource(s) encountered during all phases of the project. Unanticipated resources include sensitive species not addressed in the environmental document because of a perceived low potential to occur,

species that are known to occur but become candidates for state or federal listing as threatened or endangered, or are proposed for federal listing as threatened or endangered after the approval of the project, and common species whose range is unexpected in the project area. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM and CDFW within 48 hours of the observation;

7. Inspect or direct the Biological Monitor and/or site personnel on how to inspect active construction areas where animals may have become trapped prior to construction commencing each day. Inspect or direct the Biological Monitor and/or site personnel on how to inspect the installation of structures that prevent entrapment or allow escape during periods of construction inactivity. If site personnel perform these inspections, upon approval of the CPM, then they shall be trained by the DB and the name of the personnel and date of training shall be included in a log in the Monthly Compliance Report;
8. Each morning and periodically throughout the day, inspect areas with high vehicle activity (e.g., parking lots) for animals in harm's way, unless the CPM approves a reduced inspection frequency based on site conditions. Inspect soil or spoil stockpiles and dust abatement watering for compliance with **BIO-7**. Inspect erosion control materials (e.g., hay bales) to confirm weed-free certification. Inspect weed infestations and monitor eradication measures to determine success. Inspect trash receptacles, monitor site personnel compliance with trash handling, pet prohibitions, and all other WEAP components (**BIO-5**);
9. Ensure the implementation of the post construction conditions of certification for biological resources;
10. Notify the project owner and the CPM and CDFW directly per the requirements of **BIO-4** of any non-compliance with any biological resources conditions of certification during all phases of the project. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM and CDFW within 48 hours of the non-compliance incident;
11. Notify the project owner, the CPM, and CDFW directly of any special-status species injury or mortality. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday. The initial notification shall be followed by a formal written notification submitted to the CPM and CDFW within 48 hours of the observation;

12. Respond directly to inquiries of the CPM regarding biological resource issues by phone, email, or other correspondence;
13. Maintain written records of the tasks specified above and those included in the BRMIMP. Summaries of these records shall be submitted in the Monthly Compliance Reports and the Annual Compliance Report;
14. Maintain a record of all fish/amphibians captured and moved, and the record shall be provided to the CPM, and CDFW (c/o 1600 program, 2825 Cordelia Road, Suite 1000, Fairfield, CA 94534) with the appropriate project name and certification number as part of the Monthly Compliance Reports and the Annual Compliance Report;
15. Train the Biological Monitors as appropriate, and ensure their familiarity with the BRMIMP, WEAP training, and all permits; and
16. Maintain the ability to be in regular, direct communication with the CPM and representatives of CDFW, and USFWS, including notifying these agencies of dead or injured listed species and reporting special-status species observations to the California Natural Diversity Database.

Verification: The DB shall submit in the Monthly Compliance Reports to the CPM copies of all written reports and summaries that document site mobilization and construction activities that have the potential to affect biological resources and document compliance with all biological resource conditions of certification. The DB's written records shall be made available for the CPM's inspection on request at any time during normal business hours. During project operation, the DB(s) shall submit record summaries in the Annual Compliance Reports unless their duties cease, as approved by the CPM.

BIO-3 Biological Monitor Selection The project owner's CPM-approved DB shall submit the resume, at least three references, and contact information of the proposed Biological Monitor(s) to the CPM for review and approval and to CDFW for review and comment. The resume shall demonstrate, to the satisfaction of the CPM, the appropriate education and experience to accomplish the assigned biological resource tasks.

Verification: The project owner shall submit the specified information to the CPM for review and approval at least 45 days prior to the start of any site mobilization activities. Within 10 days of completion of training, the DB shall submit a written statement to the CPM confirming that individual Biological Monitor(s) have been trained, including the date when training was completed. If additional biological monitors are needed during site mobilization, construction, or for species specific surveys, the specified information shall be submitted to the CPM for approval at least 10 days prior to their first day of monitoring activities.

BIO-4 Designated Biologist and Biological Monitor Authority The project owner's construction/operation manager shall act on the advice of the DB and Biological Monitor(s) to ensure conformance with the biological resource conditions of certification.

If required by the DB and/or Biological Monitor(s), the project owner's construction/operation manager shall halt all site mobilization, ground disturbance, grading, construction, and operation activities in areas specified by the DB and/or Biological Monitor. The DB shall:

1. Require a halt to all activities in any area when it is determined that there would be an unauthorized adverse impact to biological resources if the activities continued;
2. Inform the project owner and the construction/operation manager when to resume activities;
3. Ensure that either the DB or the Biological Monitor notifies the project owner and the CPM of any work stoppage of site mobilization, ground disturbance, grading, construction, and operation activities and associated non-compliance incidents; notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday;
4. Notify and advise the CPM of any corrective actions that have been taken or that would be instituted as a result of the work stoppage; and
5. The CPM, in coordination with CDFW, as appropriate, shall determine if corrective action has been effective and shall direct the project owner to take further corrective action as needed.

If the DB is unavailable for direct consultation, the Biological Monitor shall act on behalf of the DB.

Verification: The project owner shall ensure that the DB or Biological Monitor notifies the CPM immediately (and no later than the morning following the incident, or Monday morning in the case of a weekend, or the next business day in the event of a state or federal holiday) of any non-compliance or a halt of any site mobilization, ground disturbance, grading, construction, and operation activities. The project owner shall notify the CPM in writing of the circumstances and actions being taken to resolve the problem within one (1) working day of initiating the corrective action.

BIO-5 Worker Environmental Awareness Program (WEAP) The project owner shall develop and implement a project-specific Worker Environmental Awareness Program (WEAP) and shall submit the draft WEAP for review and approval to the CPM. The WEAP shall be administered to all onsite personnel who would enter the project site including but not limited to surveyors, construction engineers,

employees, contractors, contractor's employees, supervisors, inspectors, subcontractors (but excluding delivery personnel), biologists, cultural, tribal, and paleontological monitors. An abbreviated WEAP (WEAP Light) can be provided to vendors, such as delivery personnel (e.g., building materials, concrete, heavy equipment, etc.), who periodically enter the project site and are limited to areas such as existing access roads and/or lay down areas. The WEAP Light shall also be submitted for review and approval to the CPM. The WEAP/WEAP Light shall be implemented during site mobilization, including vegetation clearing and preconstruction, construction, commissioning, operation, non-operation, and decommissioning. All workers must complete the WEAP prior to commencing work on the project. The WEAP and the WEAP Light may be recorded for later electronic viewing by new workers who begin work after the initial presentations.

The WEAP shall:

1. Be developed by or in consultation with the DB (See **BIO-1**) and consist of an on-site or training center presentation in which supporting written material and electronic media in English, as well as Spanish or other languages, as applicable, including photographs of protected species and their habitat, are made available to all participants;
2. Identify the lead agencies, provide an overview of the conditions of certifications, other regulatory permit requirements, and applicable LORS that must be complied with and the ramifications of non-compliance which may include fines, imprisonment, work stoppages, or loss of employment depending on the violation;
3. Identify the roles of environmental staff and define communication protocols and chain of command between environmental and construction staff. Define what actions monitors can approve such as stopping work under specific circumstances, providing guidance to comply with conditions, conducting surveys, and what actions monitors cannot approve such as directing work, expanding work areas from approved limits, changing conditions of certification requirements, or approving variances to permit conditions. Identify key field contacts and ensure that this information is posted in all break areas;
4. Provide examples of environmental signage and flagging that would be used to delineate work limits; areas for avoidance, state and or federal drainages, or other protected areas, evacuation routes, and approved staging areas;
5. Discuss the locations and types of sensitive biological resources on the project site and adjacent areas, and explain the reasons for protecting these resources; provide information to participants that no snakes or other wildlife shall be intentionally harmed (unless posing a reasonable and immediate threat to humans);

6. Describe standard environmental commitments and best management practices that apply to the project including but not limited to: storing trash in closed receptacles and removing it weekly to prevent attracting animals, capping pipes and other cavities that could be used by birds and small mammals; collecting and removing the carcasses of dead animals; limiting work to daytime hours, limiting work during periods of high rainfall, preventing vehicles and equipment from operating within a stream or canal unless specifically authorized by other permits or conditions of certification; restricting smoking to designated areas; storing chemicals and fuel in designated areas; spill prevention measures; and reporting requirements.
7. Identify project vehicle speeds on paved and unpaved access roads;
8. Place special emphasis on the protection of nesting birds and special status species, including fully protected species, species of special concern, and listed species including pictures and information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protection measures;
9. Provide pictures of the sensitive plants and wildlife known to occur in the project area, including Crotch's bumble bee, Swainson's hawk, white-tailed kite, golden eagles, burrowing owl, American badger, and other sensitive plants and wildlife. Provide information on sensitivity to human activities, legal protection, reporting requirements, and how to identify construction avoidance zones for these species as marked by flagging, staking, or other means, as described above;
10. Provide an overview for all personnel of the risk of potential impacts to small mammals, birds, amphibians and reptiles from vehicle strikes on all project roads (paved and unpaved) during construction, operations, closure phases, reporting requirements, and protection measures;
11. Describe the risk of wildfires in grassland communities and the measures that would be taken to reduce these risks such as avoiding parking in tall vegetation, limits to where workers can smoke; the locations of fire safety equipment, contact information and the procedure should a wildfire be ignited, required tools for each piece of equipment such as a shovel, Pulaski, and fire extinguisher, restrictions on welding and controlled detonations, and use of the Project Activity Level (PAL) system that describes what activities can occur based on specific weather conditions including Red Flag days;
12. Provide an overview of potential impacts to avian and bat species from collisions with the generation tie-line, and other features associated with the operations phase, reporting requirements, and protection measures;
13. Identify whom to contact if there are further comments and questions about the material discussed in the program;

14. Include a training acknowledgment form to be signed by each worker indicating that they received training and shall abide by the guidelines. A small wallet card or pamphlet with key contacts and resource information shall be prepared and provided after the training. A hard hat sticker shall also be provided to each worker to demonstrate to the monitors that they have participated in the training; and
15. The WEAP Light shall include a summary of the items above as they relate to the limited areas that vendors need to access such as existing access roads and/or lay down areas. The specific program can be administered by a competent individual(s) acceptable to the DB and documented within the Monthly Compliance Reports.

Verification: At least 45 days prior to the start of site mobilization the project owner shall provide to the CPM for review and approval the draft WEAP and all supporting written materials and electronic media prepared or reviewed by the DB and a resume of the person(s) administering the program. At least 10 days prior to site mobilization the project owner shall submit the approved final WEAP and implement the training for all workers.

The project owner shall provide in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. Training acknowledgement forms signed during construction shall be kept on file by the project owner for at least 6 months after the start of commercial operation.

Throughout the life of the project, the WEAP shall be repeated annually for permanent operational employees and shall be routinely administered to any new construction or operation personnel, foremen, contractors, subcontractors, and other personnel potentially working within the project area prior to being authorized to perform work in the project area. Training acknowledgement forms shall be maintained by the project owner and shall be made available to the CPM upon request. Workers shall receive and be required to visibly display a hard-hat sticker or certificate that they have completed the training.

During project operation, signed statements for operational personnel shall be kept on file for 6 months following the termination of an individual's employment.

BIO-6 Biological Resources Mitigation Implementation and Monitoring Plan

The project owner shall develop and implement a Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP). The project owner shall provide the draft BRMIMP to the CPM for review and comment. No site mobilization or construction activities may occur prior to approval of the final BRMIMP by the CPM. Under no circumstances shall ground disturbance proceed without implementation of all applicable permit conditions.

The BRMIMP shall be prepared in consultation with the DB and shall include the following:

1. All biological resources mitigation, monitoring, and compliance measures proposed and agreed to by the project owner;
2. All biological resources conditions of certification identified as necessary to avoid or mitigate impacts;
3. All biological resource mitigation, monitoring, and compliance measures required in state or federal agency terms and conditions, such as those provided in the National Pollutant Discharge Elimination System (NPDES) Construction Activities Stormwater General Permit and Waste Discharge Certification;
4. A discussion of all sensitive biological resources that could be impacted by project site mobilization, construction, operation, and decommissioning;
5. A detailed description of measures that shall be taken to avoid or mitigate impacts on each special-status species potentially impacted by construction and operation, including remedial actions;
6. All required mitigation measures for each sensitive biological resource;
7. All locations on a map, at an approved scale (typically 1:6,000 or other scale with CPM approval), of special-status biological resource areas subject to disturbance and areas requiring temporary protection and avoidance during site mobilization, construction and operation;
8. Aerial photographs, at an approved scale (typically 1:6,000 or other scale with CPM approval), of all areas to be disturbed during project site mobilization and construction activities; include one set prior to any site or related facilities mobilization disturbance and one set subsequent to completion of project construction. The aerial photographs shall include a reference map that shows the aerial map location in reference to the project site, reference key on each aerial, and displays the project boundary. Provide planned timing of aerial photography and a description of why times were chosen; pre-construction aerial photographs shall be submitted to the CPM for review and approval, and to CDFW for review and comment, prior to any site mobilization. Post-construction aerial photographs shall be submitted to the CPM for review and approval, and to CDFW for review and comment, no later than 30 days after completion of construction.
9. Provide a final accounting of the whole acres of vegetation communities/cover types present before and after construction and a determination of whether more or less habitat compensation is necessary, as an addendum to the BRMIMP. Construction acreages shall be rounded to the nearest 0.10 acre, unless approved by the CPM. The geographic information systems (GIS) shapefiles of all pre- and post-disturbance areas shall be provided with the submittal

10. All measures that shall be taken to avoid or mitigate temporary disturbances from site mobilization and construction activities;
11. Duration for each type of monitoring and a description of monitoring methodologies and frequency;
12. Performance standards to be used to help decide if/when proposed mitigation is or is not successful;
13. All performance standards and remedial measures to be implemented if performance standards are not met;
14. A process for proposing plan modifications to the CPM and appropriate agencies for review and approval;
15. All final versions of required plans including the BRMIMP, WEAP, Revegetation Plan, Nesting Bird Management Plan, Wildlife Protection and Relocation Plan, American Badger Relocation Plan, Post BESS Fire Monitoring and Management Plan, Frac-out Contingency Plan, and all other individual biological mitigation and/or monitoring plans associated with the project shall be included as attachments; and
16. A requirement to submit any sightings of any special-status species that are observed on or in proximity to the project site, or during project surveys, to the California Natural Diversity Database, per CDFW requirements; and
17. Final Report. The project owner shall provide a final construction termination report to the CPM after the project is fully completed. The construction termination report at a minimum shall contain, list of all species, including fish or amphibians, relocated from the project area, photographs of the work area, and photographs of the site after the project is completed.

Verification: The project owner shall submit the draft BRMIMP to the CPM for review and approval at least 45 days prior to the start of any site mobilization. The project owner shall provide the final BRMIMP to the CPM at least 10 days prior to the start of any site mobilization. Pre-construction aerial photographs shall be submitted to the CPM for review and approval, and to CDFW for review and comment, prior to any site mobilization. No later than 30 days after completion of project construction, the project owner shall submit the post-construction aerial photographs and the construction termination report to the CPM.

Implementation of BRMIMP measures shall be reported in the Monthly Compliance Reports by the DB (e.g., survey results, site mobilization and construction activities that were monitored, non-compliance incidences and resolution, species observed, etc.). No later than 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying which items of the BRMIMP have been completed, a summary of all CPM-approved modifications to

mitigation measures made during the project's site mobilization and construction activities, and which mitigation and monitoring items are still outstanding.

To verify that the extent of construction disturbance does not exceed that described in these conditions, the project owner shall submit aerial photographs, at an approved scale, taken before and after construction to the CPM and CDFW. The first set of aerial photographs shall reflect site conditions prior to any preconstruction site mobilization and construction activities and shall be submitted prior to initiation of such activities. The second set of aerial photographs shall be taken subsequent to completion of construction and shall be submitted to the CPM for review and approval, and to CDFW for review and comment, no later than 30 days after completion of construction.

The project owner shall also provide a final accounting in whole acres of vegetation communities/cover types present before and after construction no later than 30 days after completion of construction.

The project owner shall also provide GIS shapefiles of all pre- and post-disturbance areas no later than 30 days after completion of construction.

BIO-7 General Impact Avoidance and Minimization Measures The project owner shall ensure implementation of the following measures during site mobilization, construction, operation, and closure to manage their project site and related facilities in a manner to avoid or minimize impacts to biological resources:

1. Limit Disturbance Areas. The boundaries of all areas to be temporarily or permanently disturbed (including staging areas, access roads gen-tie line pole locations, etc.) shall be delineated with stakes and flagging prior to any site mobilization, vegetation clearing, ground disturbance, or construction activities in consultation with the DB. All construction sites, laydown areas, and parking locations shall be fenced to prevent potential access to the site by small animals. Spoils shall be stockpiled away from the edges of drainages and stabilized to ensure sediment-laden water does not enter the drainage. All disturbances, vehicles, and equipment shall be confined to the flagged areas.
2. Minimize Road Impacts. New and existing roads that are planned for construction, widening, or other improvements shall not extend beyond the flagged impact area as described above. All vehicles passing or turning around shall do so within the planned impact area or in previously disturbed areas. Where new access is required outside of existing roads or the construction zone, the route shall be clearly marked (i.e., flagged and/or staked) prior to the onset of construction.
3. Minimize Traffic Impacts. Vehicular traffic during project site mobilization, construction and operation shall be confined to existing routes of travel to and from the project site, and cross-country vehicle and equipment use

outside designated work areas shall be prohibited. The speed limit shall not exceed 15 miles per hour on paved or stabilized unpaved roads within the project area, on maintenance roads for linear facilities, or on access roads to the project site. Project vehicles shall abide by posted speed limits on paved public roads outside the project site.

4. Inspect Pipes and Trenches. At the end of each workday, the DB, Biological Monitor, and/or site personnel (approved and trained by the DB, as described under **BIO-2**) shall ensure that all potential wildlife pitfalls (trenches, bores, and other excavations) have been backfilled. If site personnel are inspecting trenches, bores, and other excavations and wildlife is trapped, they shall immediately notify the DB and/or Biological Monitor.

   If backfilling is not feasible, all trenches, bores, and other excavations shall be covered or fenced to prevent wildlife entrapment or sloped at a 3:1 (run:rise) ratio at the ends to provide wildlife escape ramps.

   Should wildlife become trapped, the DB or Biological Monitor shall remove and relocate the animal to a safe location. Any wildlife encountered during construction shall not be harassed and shall be allowed to leave the construction area unharmed. If needed, the CPM approved DB and/or Biological Monitor may guide, handle, or capture an individual non-CESA-listed wildlife species to move it to a nearby safe location within nearby refugium, or it shall be allowed to leave the project area of its own volition. Capture methods may include hand, dip net, lizard lasso, snake tongs and snake hook.

5. Prevent Wildlife Entrapment. All pipes, culverts, or similar structures that are staged or stored on site for one or more overnight periods shall be either: 1) immediately capped, screened, or filled with material upon delivery to the project site, or 2) thoroughly inspected for wildlife by the DB and/or Biological Monitor prior to use in project activities. Portable toilets shall require vent pipes to be screened to prevent cavity using birds from becoming trapped in the pipe. In addition, any fencing, signposts, pipes or poles installed temporarily or permanently throughout the course of the project shall have the top capped and/or the top three post holes covered or filled with screws or bolts prior to the end of the workday in which the installation occurs to prevent the entrapment of wildlife. No barbed wire shall be allowed where it may result in harm to birds and other wildlife.

6. Wildlife Encounters. The DB shall ensure that any unexpected wildlife species are fully avoided during construction. Should an unexpected wildlife species be detected a non-disturbance buffer shall be implemented based on the species ecology or species-specific condition of certification, and work shall be suspended in that area until the animal leaves on its own volition. The DB or Biological Monitor may move individuals of non-CESA-listed species if they possess the appropriate state and/or federal handling permits. Any

observations of unexpected wildlife should comply with notification requirements provided in **BIO-2**, Item 6.

7. Special-Status Species Encounters. If special-status species are encountered during work, the project owner shall notify the CPM immediately. If there is imminent danger of injury to special-status species from project activities, and the special-status species individual(s) do not move out of the work area on their own, the DB and/or Biological Monitor shall relocate the individual(s) to suitable habitat located at a safe distance away (a minimum of 250 feet) from the construction area. The DB shall contact the CPM within 24 hours of relocation activities. A record shall be maintained as described in **BIO-2**, Item 14.

   For any CESA and/or ESA listed or candidate species, all work in the immediate vicinity shall cease and the area shall remain undisturbed until the individual has left the site or the DB and/or Biological Monitor determines that work may resume without risk of take.

8. Prepare a Wildlife Protection and Relocation Plan. The project owner, in coordination with the DB, shall prepare a Wildlife Protection and Relocation Plan (WPRP) prior to the start of site mobilization. The WPRP shall provide guidance and protocols for avoiding or handling common and sensitive species that are located within the project area. The WPRP shall include measures for handling rattlesnakes or other snakes found in or near work areas and access roads and provide these guidelines to all Biological Monitors, safety staff, and other personnel. Killing or harming rattlesnakes or other wildlife is not authorized, unless there is an immediate and unavoidable threat to human safety and relocation is not feasible. The WPRP shall include methods to salvage or relocate common and sensitive wildlife during site mobilization and/or construction activities, including any ground disturbance activities such as clearing, grubbing, and grading operations when feasible to off-site habitat or out of harm's way. The species shall be salvaged or relocated when conditions would not jeopardize the health and safety of the DB and/or Biological Monitor.

9. Minimize Lighting Impacts. To minimize adverse effects of artificial light on wildlife, exterior lighting fixtures associated with project construction shall be downward facing, fully shielded, and designed and installed to minimize backscatter, reflection, minimize skyward illumination, minimize spillover onto adjacent wildlife habitat. Lights used shall be lower on the light spectrum (lower Kelvins with fewer short-wavelength blue light emissions).

10. Use Non-toxic Soil Binders. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants and shall be approved by the CPM prior to use.

11. Minimize Impacts from Pest Control. Anticoagulants shall not be used for rodent control. Pre-emergent and other herbicides with documented residual

toxicity shall not be used. Herbicides shall be applied consistent with federal, state, and local laws and according to the guidelines for wildlife-safe use of herbicides in Item 21.

12. Minimize Standing Water. Water applied to dirt roads and construction areas (trenches or spoil piles) for dust abatement shall use the minimal amount needed to meet safety and air quality standards to prevent the formation of puddles, which could attract predators of special-status species to construction sites. During site mobilization and/or construction, site personnel shall patrol these areas to ensure water does not puddle and attract crows and other wildlife to the site and shall take appropriate action to reduce water application rates where necessary.

13. Handling of Road-killed Animals. Report all inadvertent deaths of special status species to the appropriate project representative, including roadkill. Species name, identifiable physical characteristics of the animal (sex, age class, length, weight), and other pertinent information shall be noted and reported in the Monthly Compliance Reports.

    During site mobilization and/or construction, injured or dead animals detected by personnel in the project area shall be reported immediately to the DB and/or Biological Monitor, who shall remove the carcass or injured animal promptly. During operations, the Environmental Compliance Manager, or equivalent position, for the project owner shall be notified and they shall contact the DB and/or Biological Monitor for further instructions.

    The DB shall notify the project owner, the CPM, and CDFW and/or USFWS, directly of any special-status species injury or mortality. Notifications shall occur immediately and no later than the following morning, or Monday morning in the case of a weekend, or the next business day in the case of a state or federal holiday per **BIO-2**. Additionally, the DB shall contact the CPM, CDFW and/or USFWS within 1 working day of receipt of the carcass for guidance on disposal or storage of the carcass. The project owner shall follow instructions that are provided by the appropriate agency contact. The veterinary fees for the treatment of injured wildlife shall be covered by the project owner for project-related injuries or wildlife found injured on the project site.

14. Minimize Spills of Hazardous Materials. All vehicles and equipment shall be maintained in proper working conditions to minimize the potential for fugitive emissions of motor oil, antifreeze, hydraulic fluid, grease, or other hazardous materials or wastes. The DB shall be informed immediately of any hazardous spills. Any on-site servicing of vehicles or construction equipment shall take place only at a designated area approved by the DB. Service/maintenance vehicles shall carry a bucket and pads to absorb leaks or spills.

15. Remove Trash Weekly. During construction all trash and food-related waste including micro-trash shall be placed in secure, self-closing containers to

prevent access by wildlife and removed weekly or more frequently from the site. Workers shall not feed wildlife or bring pets to the project site.

16. No Firearms. Except for law enforcement or security personnel, no workers or visitors to the site shall bring firearms or weapons to the project site.

17. Avoid Use of Toxic Substances. Soil bonding and weighting agents used on unpaved surfaces shall be non-toxic to wildlife and plants.

18. Minimize Disturbance Areas. Limit the size of any vegetation and/or ground disturbance to the minimum area needed for safe completion of project activities, and limit ingress and egress to defined routes; Vegetation marked for protection may only be trimmed with hand tools to the extent necessary to gain access to work sites.

19. Weed and Monofilament Free Wattles. All materials used for erosion control and sediment barriers (e.g., straw, hay bales, and seed) shall be certified as weed free. Monofilament plastic shall not be used for erosion control. In addition, non-native species shall not be used in landscaping plans and erosion control.

20. Consistent with APLIC Guidelines. The generation tie-line and all associated components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006) and Reducing Avian Collisions with Power Lines (APLIC 2012), or most recent APLIC guidance, to reduce the likelihood of large bird electrocutions and collisions. This includes the placement of avian deterrent markers on the shield wire to reduce the risk of collision by Swainson's hawk and other raptors.

21. Herbicide and Pesticide Use. During site mobilization and/or construction and operation, the project owner shall conduct pesticide management in accordance with standard Best Management Practices (BMPs). The BMPs shall include non-point source pollution control measures. The project owner shall use a licensed herbicide applicator and obtain recommendations for herbicide use from a licensed Pest Control Advisor. The project owner shall minimize use of rodenticides and herbicides in the project area and prohibit the use of chemicals and pesticides known to cause harm to non-target plants and wildlife. Prior to any such use of herbicides or pesticides, the project owner shall consult with the CPM and may only use herbicides or pesticides upon the CPM's express written approval for each type of use. The project owner shall ensure that any herbicide use only occurs when Crotch's bumble bees are dormant, or when flowers within the application area are no longer in bloom, unless authorized by the CPM to control weeds.

    The project owner shall not use pesticides, including herbicides, insecticides, fungicides, or rodenticides within the project area without prior consultation

with and written approval from the CPM. Herbicides may be used if needed for noxious weed control or habitat restoration and enhancement.

Areas identified as sensitive by the DB, or with suspected occupied nesting or denning habitats, shall not be treated with pesticides or herbicides. Through this consultation, the CPM, in coordination with CDFW, may approve limited use of herbicides through targeted spray (e.g., backpack sprayer) at a buffer from sensitive species habitat. Herbicide-mixing sites shall be located in areas devoid of vegetation, and where there is no potential of a spill reaching a vegetated area or waters of the state. Use of neonicotinoid pesticides will not be approved by the CPM within the project area. If approved by the CPM, application will be in accordance with federal, state, and Solano County regulations, as directed by the manufacturer, and shall be applied by a California state-licensed pesticide applicator.

The project owner shall ensure that pesticide use only occurs when Crotch's bumble bees are dormant or when flowers are no longer in bloom. Pesticides (including insecticides) may only be applied post construction in indoor areas where contact with wildlife and foraging Crotch's bumble bee could not occur. All pesticide use shall strictly adhere to label requirements established by the U.S. Environmental Protection Agency and shall comply with all applicable federal, state, and local regulations and application shall be conducted in a manner that avoids adverse effects to special-status species and their habitats. If rodent control must be conducted, zinc phosphide or an equivalent product shall be used.

22. Minimize Stormwater Impacts. Standard BMPs from the project Storm Water Pollution Prevention Plan shall be implemented during all phases of the project (construction, operation, and decommissioning) where storm water run-off from the site could enter adjacent drainages. Sediment and other flow-restricting materials shall be moved to a location where they shall not be washed back into the jurisdictional waters. All disturbed soils within the project site shall be stabilized to reduce erosion potential, both during and following construction. Impacts from grading shall be minimized by ensuring that existing drainage areas and patterns are maintained in their pre-project conditions, as feasible.

23. Storage of Project Materials. Work crews shall store all project materials, tools, hardware, equipment and all loose items in a manner that shall prevent their removal or ingestion by wildlife. In addition, all materials that are liquid, granular, or powder shall be placed in sealed leak-proof containers and stored in a manner that prevents access by wildlife.

24. Invasive Species. The project owner shall conduct project activities in a manner that prevents the introduction, transfer, and spread of terrestrial invasive species from one work site and/or water body to another. Prior to entering the project area, the project owner shall inspect equipment for

invasive species, and, if any signs of invasive species are found, the equipment shall be cleaned to remove those species. All visible soil/mud, plant materials, and animal remnants on equipment shall be removed prior to entering and exiting the work site. The project owner shall notify the CPM and CDFW immediately if an invasive species not previously known to occur within the work site is discovered during work activities by contacting the CPM and CDFW's Invasive Species Program by email at invasives@wildlife.ca.gov. Additionally, the project owner shall not plant, seed or otherwise introduce invasive non-native plant species. Prohibited invasive non-native plant species include those identified in the Cal-IPC's database, which is accessible at: http://www.cal-ipc.org.

Verification: All general impact avoidance and minimization measures shall be included in the BRMIMP and implemented. Implementation of the measures shall be reported by the DB in the Monthly Compliance Reports during construction and reported in Annual Compliance Reports during operation, including but not limited to the requirements cited above and in **BIO-2.**

The project owner shall submit the draft WPRP to the CPM for review and comment at least 45 days prior to the start of project site mobilization. The project owner shall provide the final WPRP to the CPM for approval at least 10 days prior to project site mobilization.

Within 30 days after completion of project construction, the project owner shall provide to the CPM, for review and approval, a written construction termination report identifying how measures were completed.

BIO-8 Vegetation Restoration Plan The project owner shall develop and implement a Vegetation Restoration Plan (Restoration Plan) to restore approximately 24.4 acres of habitat subject to temporary impacts. The project owner shall provide the draft Restoration Plan to the CPM for review and approval. The restoration activities shall not be implemented until the project owner has received written approval of the final Restoration Plan from the CPM. The Restoration Plan shall be prepared in consultation with the DB or qualified restoration specialist and shall include, but not be limited to, the following:

1. Performance Standards. The Restoration Plan shall include the following performance standards that the project owner shall meet:
    a. Gravel and other non-native substrates shall be removed from restoration areas;
    b. To the maximum extent feasible, topsoil shall be salvaged from within on-site work areas prior to construction. Imported fill soils shall be limited to weed-free and pathogen-free topsoil similar in texture, chemical composition and pH to soils found at the project area;

c. Minor re-contouring may be conducted; however, the project owner shall limit grading compaction, fill, and other earthmoving activities to the project area. Soils shall be protected from wind erosion using a biodegradable erosion control blanket or appropriate mulch cover, or other appropriate methods approved by the CPM, until vegetation is established. Seed shall be applied in the early fall, typically between October 15 and October 31, or outside of this window with CPM approval. If feasible, seed shall be applied immediately prior to the first rain event. Mulch and seed shall be weed free and pathogen free;

d. The project owner shall revegetate areas of bare ground resulting from site mobilization and construction activities with native grasses, as listed below. If another method is to be used, the project owner shall receive written approval from the CPM prior to starting restoration work. Local native grass species may include, but are not limited to, meadow barley (*Hordeum brachyantherum* ssp. *californicum*), blue wildrye (*Elymus triticoides*), California brome (*Bromus carinatus*), California oatgrass (*Danthonia californica*), and California melic (*Melica californica*). Locally native wildflower seeds may also be included in the seed mix.

e. The project owner shall complete seeding prior to winter rains, but no later than October 31 of the year of the impact (or by December 31 of the year of the impact with prior approval from the CPM). At the discretion of the CPM, all exposed areas where seeding is unsuccessful after 90 days shall receive appropriate soil preparation and a second application of seeding, straw, or mulch as soon as is practical on a date mutually agreed upon. Straw and/or mulch used shall be weed and pathogen free.

f. No more than 15 percent of the vegetation shall consist of species designated as high or moderate invasive plants in the Cal-IPC California Invasive Plant Inventory Database (CAL-IPC). If the presence of invasive species exceeds this threshold, the project owner shall be responsible for conducting appropriate control activities in coordination with the CPM.

2. Monitoring and Maintenance. The project owner is responsible for monitoring and maintaining the restored areas for three years or until the Restoration Plan success criteria have been met, whichever is longer. Following the initial six-month period after restoration activities conclude, the project owner shall submit a brief monitoring report (10 pages or less, not including figures) to the CPM. This report shall detail vegetation establishment, percent invasive plant cover, and other observations regarding restoration success.

   The project owner shall submit an annual restoration monitoring report to the CPM by January 31 of each year until all performance standards have been met. Each annual report shall include the following: i) monitoring results (including methods and a discussion of modifications since the previous monitoring period), if applicable; ii) evaluation of conditions relative to

success criteria; iii) remedial measures identified and implemented following the previous monitoring period; iv) photographs taken from established photograph points, and v) overall site progress. Any proposed changes to the performance criteria or timelines shall require written CPM approval.

If the survival and/or cover requirements are not meeting the performance standards outlined in Item 1, the project owner is responsible for replacement planting, additional watering, weeding, invasive plant eradication, or any other practice necessary to achieve these requirements. Replacement plantings shall be monitored with the same survival and growth requirements for three years after planting.

3. Pollen and Nectar Resources. The Restoration Plan shall include a list of pollen and nectar resources that specifies a palette of drought-tolerant, locally native (eastern San Francisco Bay Area) species of which at least three species can be expected to be blooming at any given time throughout the active season for Crotch's bumble bee (approximately February 1 through October 31). Nectar- and pollen-producing plants that may be used by Crotch's bumble bee include, but are not limited to, the genera *Asclepias*, *Chaenactis*, *Lupinus*, *Phacelia*, and *Salvia*, and plants in the families Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, Hydrophyllaceae, Plantaginaceae, Onograceae, Papaveraceae, Polygonaceae, Boraginaceae, including non-native flowering plants. Tropical milkweed (*Asclepias curassavica*) shall not be used. The Restoration Plan shall specify that pollen and nectar resources imported to the project area shall be pesticide-free and pathogen-free.

4. Photo Monitoring. The DB shall establish no less than 10 photo monitoring stations to provide representative views of project construction and restoration activities. Photo monitoring station results shall contribute to the CPM's assessment of temporary impacts and restoration work; therefore, the DB should ensure that photo monitoring stations numbers and locations are sufficient to document temporary impacts and restoration success. Photo monitoring shall be done as follows:

   a. Stations should be located in areas that allow for unobstructed views and a field of vision of approximately 2,000 feet.

   b. At least one photograph shall be taken at all stations prior to ground-disturbing activities, and each month thereafter until construction and initial restoration are complete. Photo documentation of restoration success shall occur every three months following initial restoration until restoration success criteria are reached.

   c. Photo monitoring station locations shall be provided to the CPM in a geographic format with the coordinate system and horizontal error identified. If the CPM determines, in coordination with the DB (as

necessary), that additional monitoring stations are necessary, the locations shall be added to the inventory of photo monitoring stations.

d. During each photo monitoring cycle, the project owner shall take photographs at all stations within two consecutive days.

Verification: The project owner shall submit a draft Vegetation Restoration Plan to the CPM for review and approval at least 30 days prior to the start of revegetation activities, or within 6 months of certification, whichever occurs first. The project owner shall provide the final Restoration Plan to the CPM for approval at least 10 days prior to the start of revegetation activities.

After the first 6 months of restoration activities, the project owner shall submit to the CPM for review and approval a monitoring report. The project owner shall submit an Annual Restoration report to the CPM for review and approval by January 31 each year until all performance standards are met. Upon completion of all revegetation activities and achievement of the performance standards, the project owner shall submit a Final Restoration Report documenting all the restoration actions implemented, monitoring results, and confirmation that all requirements have been satisfied.

BIO-9 Crotch's Bumble Bee Avoidance Measures To avoid take of Crotch's bumble bee, the DB and/or Biological Monitor(s) shall conduct a habitat assessment to determine if the project site and the immediate surrounding vicinity (up to 50 feet) contain habitat suitable to support foraging, nesting, and/or overwintering resources for Crotch's bumble bee. Potential nesting and overwintering sites, including all small mammal burrows, perennial bunch grasses, thatched annual grasses, brush piles, old bird nests, dead trees, and hollow logs, shall be documented as part of the assessment. All floral resources shall also be documented to identify potential foraging habitat.

If potentially suitable habitat is identified, the DB and/or Biological Monitor shall conduct focused (protocol-level) surveys for Crotch's bumble bee and their requisite habitat features following the methodology outlined in the "Survey Considerations for California Endangered Species Act (CESA) Candidate Bumble Bee Species" (CDFW 2023) or more recent published guidelines and/or CDFW recommended methods.

If Crotch's bumble bee is detected at any time during site mobilization and/or construction or operation:

1. No take is allowed. All project activities shall be implemented to fully avoid take of individuals, nests, or other habitat features.
2. All small mammal burrows, thatched/bunch grasses, and suitable floristic resources shall be avoided by a minimum radius of 50-foot no-disturbance buffer.

3. A minimum 50-foot avoidance buffer shall be established around any observed nests during both construction and operation.
4. If ground disturbing activities will occur during the overwintering period (October through February), the project owner shall consult with the CPM prior to initiating work to determine how project activities shall be modified, delayed, or otherwise implemented to avoid take.
5. The project owner shall not use substances such as herbicides, insecticides, or rodenticides except as allowed under **BIO-7**, Item 21: Herbicide and Pesticide Use.

The DB and/or Biological Monitor shall prepare a written report documenting the habitat assessment results and, if applicable, the results of the protocol-level surveys. The report shall describe survey methods, results, impact avoidance and minimization measures implemented, and the results of those measures. The DB and/or Biological Monitor shall ensure that appropriate CNDDB records are filed (per **BIO-6**, Item 16). The DB shall report all sightings of this species on the project site to the CPM and CDFW within 24 hours.

These measures shall be included in the BRMIMP and implemented.

Verification: The project owner shall submit the results of the habitat assessment to the CPM for review and approval and to CDFW for review and comment within 30 days of completion and no more than 10 days after the completion of the surveys. The project owner shall submit information describing the findings of the bumble bee surveys and implementation of any avoidance measures in the Monthly Compliance Report (per **BIO-6**) and the Annual Compliance Report, during operation, to the CPM and CDFW.

BIO-10 Monarch Butterfly Avoidance and Minimization Measures No more than 2 days prior to the initiation of site mobilization and/or construction-related vegetation trimming or removal, the project owner shall ensure that the DB and/or Biological Monitor surveys all areas of potentially suitable habitat for monarch butterfly larval host plants. Surveys shall be conducted by qualified biologists approved by the CPM pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

If host plants are found, the DB shall survey all host plants for monarch eggs, larvae, and pupae. If no eggs, larvae, or pupae are found, plants may be removed within 2 days with approval from the CPM. If eggs, larvae, or pupae are present, host plants shall be protected in place until the DB has determined that the breeding season has concluded, or coordination with the CPM and USFWS occurs. It is recommended, to the extent feasible, that milkweed removal should be avoided until after the plant has gone to seed.

Verification: The project owner shall submit the results of the pre-construction monarch butterfly survey to the CPM for review and approval and CDFW for review and comment no later than 7 days after the survey is completed. The project owner shall submit a final survey report to the CPM for review and approval and to CDFW for review and comment no more than 30 days after survey effort has been completed.

BIO-11 Northwestern Pond Turtle Avoidance and Minimization Measures

Within 48 hours prior to initiation of site mobilization and/or construction, the DB and/or Biological Monitor shall survey the project site for northwestern pond turtles and their nests. Surveys shall be conducted by qualified biologists approved by the CPM pursuant to **BIO-1** and/or **BIO-3**. Surveys shall consist of visual encounter surveys for northwestern pond turtle individuals, nests, or evidence of nesting prior to any ground disturbance within 656 feet of aquatic habitats, using methods consistent with current CDFW guidance, including the USGS draft Western Pond Turtle survey protocol posted on the CDFW website, or more recent CDFW-approved methods. Surveys shall be conducted on sunny days between the hours of 8:00 a.m. and 12:00 p.m. to maximize likelihood of observation of individual turtles during basking events in nearby aquatic habitats.

If northwestern pond turtles are found during surveys, a site-specific avoidance, minimization, and/or relocation plan (**BIO-7**, Item 8) shall be prepared for review and approval by the CPM and review and comment by CDFW. This plan shall be submitted prior to starting site mobilization and construction activities within the areas where pond turtles were discovered. All measures included in the approved plan shall be implemented during project activities. These measures shall be included in the BRMIMP and implemented.

If a nest is found, work within 50 feet of the nest shall be stopped and the DB and/or Biological Monitor shall prepare a nest protection plan, to be reviewed and approved by the CPM, in coordination with CDFW, to ensure the nest is protected until it is no longer active. Turtles may be moved "out of harm's way" to the nearest safe and suitable habitat at least 250 feet away from the project site, provided the individual is not actively nesting, by the CPM approved DB and/or Biological Monitor with appropriate experience handling the species.

Verification: The project owner shall submit the pre-construction survey results to the CPM for review and approval and CDFW for review and comment within 7 days after the survey has been completed. The project owner shall submit a final survey report to the CPM for review and approval and to CDFW for review and comment within 30 days of completion of northwestern pond turtle surveys.

If required, the project owner shall submit a draft nest protection plan to the CPM for review and approval and to CDFW for review and comment. A final nest protection plan shall be submitted prior to implementation.

BIO-12 Nesting Bird Avoidance and Minimization Measures The project owner shall prepare and implement a Nesting Bird Management Plan (NBMP) in coordination with the DB and submit it to the CPM for review and approval. The project owner shall submit the resumes of avian monitors under **BIO-1** and/or **BIO-3** prior to site mobilization and/or construction, if these activities are planned to occur during the breeding season. The NBMP shall describe methods to minimize potential project effects to nesting birds and avoid any potential for unauthorized take of special-status birds without incidental take authorization. Where scheduling allows, the project owner shall clear or remove any vegetation, conduct site preparation in open or barren areas, or other project-related activities that may adversely affect breeding birds outside the nesting season.

Pre-construction nest surveys shall be conducted during the breeding season for local and migratory birds and will be timed to account for seasonal variation (January 1 to August 31 for raptors and March 1 to August 31 for other species).

1. Survey Requirements. Surveys shall cover all potential nesting habitat and substrates within the project site and areas surrounding the project site within 500 feet of the project boundary, unless otherwise prohibited due to legal access or safety issues, upon approval from the CPM. The NBMP shall describe each survey methodology proposed to ensure detection of common and special-status birds, except species described under COCs **BIO-13** through **BIO-16** (bald and golden eagle, western burrowing owl, Swainson's hawk, and white-tailed kite). Surveys shall be repeated during all phases of site mobilization and construction.
2. Survey Schedules. At least two pre-construction surveys shall be conducted, separated by a minimum 10-day interval. Pre-construction surveys shall be conducted no more than 14 days prior to initiation of site mobilization and/or construction activity. One survey needs to be conducted within the 3-day period preceding initiation of site mobilization, brush clearing, ground disturbance, or construction activity. Surveys shall be repeated throughout site mobilization and construction phases to ensure that birds are not nesting on equipment or have moved into an area after the initial vegetation clearance has been completed.
3. Nest and Avian Monitoring and Surveys During Construction. Additional follow-up surveys shall be required if periods of construction inactivity exceed three weeks during January 1 through August 31 in any given area, an interval during which birds may establish a nesting territory and initiate egg laying and incubation.
4. Nest Detection. If active nests are detected during surveys, a no-disturbance buffer zone (protected area surrounding the nest) shall be established around each nest. Fencing and/or flagging will be used to delineate the no-activity zone. To minimize the potential to affect the reproductive success of the nesting pair, the extent of the no-activity zone shall be based on several

factors, including the distance of the activity to the nest, the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the species, and the dissimilarity of the proposed activity to background activities. The no-activities zone shall be large enough to avoid nest abandonment.

The NBMP shall define species-specific or guild-specific default buffers for common and special status birds, to be applied if an active nest is encountered. These buffer distances shall be reviewed and approved by the CPM, in consultation with CDFW, as part of NBMP approval. For common species the default buffers in the NBMP may be modified upon request by the DB, with justification provided. For common species and special status species, buffer reductions shall follow the process outline below (or as described in conditions of certification specific for those species). Nest locations shall be mapped using GPS technology.

The plan shall include a table outlining minimum default buffer distances for specific avian groups during site mobilization and/or construction, detailing the avian groups, species potentially nesting within the project limits and survey area, and corresponding horizontal buffer distances based on disturbance level (DL) in feet, unless alternative table format is approved by the CPM. Typical minimum default buffer distances are 500 feet for most raptors and 250 feet for most passerines, as well as other species or guild-specific buffers.

Nest buffers shall be delineated using the following process:

- Upon discovery of an active nest the default buffer identified in the NBMP shall be applied
- For common species, the DB(s) and/or Biological Monitor(s) with avian experience may adjust the site-specific nest buffer from the default buffer distance identified in the approved NBMP based on nest location characteristics (e.g., natural barriers), type and extent of project disturbance, and observed bird behavior. The adjusted nest buffer shall be sufficiently large to avoid disturbance to the nesting birds and based on the default buffers included in the approved NBMP.
- Nest buffer reductions for special-status species shall be requested in writing via email to the CPM for review and approval. Any reduction of a nest buffer for a special-status species requires written approval from the CPM.
- Any adjusted nest buffers for common species, or CPM-approved nest buffer reductions for special-status species, shall be documented in regular monitoring and compliance reports including if the nests were successful or failed.

5. Active Nest Protection. If active nests are detected during the survey, the DB(s) or Biological Monitor(s) shall monitor all nests with buffers at least once every three days or more if the project activity levels increase, to determine whether birds are being disturbed. If signs of disturbance or distress are observed, the DB(s) or Biological Monitor(s) shall immediately implement adaptive measures to reduce disturbance to a degree that disturbance or distress is no longer occurring, in coordination with the CPM. These measures could include, but are not limited to, increasing buffer size, halting disruptive site mobilization and/or construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity. The DB(s) or Biological Monitor(s) shall monitor the nest until it is determined that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the DB(s) or Biological Monitor, disturb nesting activities (e.g., exposure to exhaust), shall be prohibited within the buffer zone until such a determination is made. Any nest buffer reduction would require full time monitoring if reduced from the levels identified in the approved NBMP.
6. NBMP Content. The NBMP shall include the following:
    a. Definitions of default nest avoidance buffers for each species or group of species, depending on characteristics and conservation status for each species and the nature of planned project activities in the vicinity;
    b. Notification procedures for buffer distance reductions should they become necessary;
    c. Pre-construction survey protocol (surveys no longer than 3 days prior to starting work activity at any site);
    d. Monitoring protocol, to be implemented until adjacent site mobilization and construction activities are completed or the nest is no longer active, including qualifications of monitors, monitoring schedule, and field methods, to ensure that any project-related effects to nesting birds shall be minimized;
    e. Protocol for documenting and reporting any inadvertent contact with or effects to birds or nests;
    f. Specify the responsibilities of construction workers and site personnel with regard to nests and nest issues and specify a direct communication protocol to the DB and/or Biological Monitor;
    g. Specify a procedure to be implemented following accidental disturbance of nests, including wildlife rehabilitation options; and
    h. Specify a procedure for removal of inactive nests, including verification that the nest is inactive and a notification/approval process.

The NBMP shall be applicable throughout the nesting season (from January 1 through August 31).

7. Nest deterrents. The NBMP shall describe any proposed measures or deterrents to prevent or reduce bird nesting activity on project equipment or facilities, such as buoys, visual or auditory hazing devices, bird repellents, securing of materials, and netting of materials, vehicles, and equipment.

   It shall also include timing for installation of nest deterrents and field confirmation to prevent effects to any active nest; guidance for the contractor to install, maintain, and remove nest deterrents according to product specifications; and periodic monitoring of nest deterrents to ensure proper installation and functioning and prevent injury or entrapment of birds or other animals.

   If an active nest is located on project facilities, materials or equipment, the project owner shall avoid disturbance or use of the facilities, materials or equipment (e.g., by red-tag) until the nest is no longer active.

8. Nest Start Removal. Prior to removing any suitable nesting habitat, preconstruction nesting bird surveys shall inform where existing raptor nests, and other special status bird nests, occur throughout the project area. The locations of existing special status bird nests within the habitat removal footprint shall be recorded and mapped by a qualified biologist. Such nests shall be removed outside of the nesting bird season.

   Due to the potential for nest building during active construction, a biological monitor shall be employed for the duration of project construction to regularly inspect for nest building attempts that may occur on/within construction equipment and/or within an area of active construction disturbance.

   In the event nest building is detected, the biologist shall deter birds from nesting using non-invasive methods to modify the circumstances. In the event a nest is built, and eggs are laid, the nest shall be considered an active nest and shall be avoided. This may include placing a buffer around a piece of equipment or closing off a work area until the nest has fledged. This measure shall not be employed for state or federal special status species.

9. Accidental Nest Disturbance. The NBMP shall specify a procedure to be implemented following accidental disturbance of nests, including wildlife rehabilitation options. It also shall describe any recommended measures, and applicable circumstances, to prevent take of precocial young of ground-nesting birds such as killdeer or quail. The project owner shall identify an appropriate wildlife care facility before starting site mobilization. The location of the care facility shall be provided to the CPM prior to site mobilization. The project owner shall bear any costs associated with the care or treatment of project related injured birds. The project owner shall provide a letter report detailing the outcome of the care to the CPM.

10. Reporting. Throughout the construction phase of the project, nest locations, project activities in the vicinity of nests, and any adjustments to buffer areas shall be updated and available to the CPM, weekly or other CPM-approved timeframe. All buffer reduction notifications and prompt notifications of nest-related non-compliance and corrective actions shall be made via email to the CPM.

    The draft NBMP shall include a proposed format for regular reporting (e.g., spreadsheet available online, tracking each nest). In addition, the NBMP shall specify the format and content of nest data to be provided in regular monitoring and compliance reports. At the end of each year's nest season, the project owner shall submit an annual NBMP report to the CPM and CDFW. Specific contents and format of the annual report shall be reviewed and approved by the CPM, in consultation with CDFW.

Verification: The project owner shall prepare and implement a NBMP in coordination with the Designated Biologist and submit to the CPM for review and approval and to CDFW for review and comment no less than 45 days prior to site mobilization. The project owner shall submit pre-construction survey reports to the CPM and CDFW no more than 30 days after each survey effort has been completed. At the end of each year's nest season, the project owner shall submit an annual NBMP report to the CPM and CDFW no more than 30 days after the end of the nesting season. The project owner shall provide a letter report detailing the outcome of the care of any injured birds or nest failures to the CPM and the CDFW within 14 days of the incident.

BIO-13 Bald and Golden Eagle and Nest Protection Buffers If project activities occur during the golden eagle nesting season (December 15 to August 31), the DB and/or Biological Monitor shall conduct pre-construction surveys no more than 30 days prior to the start of any site mobilization, construction, or other ground-disturbing activities, including heavy equipment use and staging. The survey(s) shall include a sufficient area, but no less than 1-mile from activities, to identify any golden eagle that are present and determine their status. 'Sufficient' in the context of this condition means covering all areas in which nests could potentially be affected by the project activities.

Surveys shall be conducted by qualified biologists approved by the CPM pursuant to **BIO-1** and/or **BIO-3**. The DB shall submit protocol-level survey methodologies to the CPM for review and approval prior to the start of surveys. These measures shall be included in the BRMIMP and implemented.

The DB and/or Biological Monitor shall report any coordination with USFWS and active golden eagle nests to the CPM within 24 hours.

Nest Protection Buffer. The DB(s) or Biological Monitor(s) shall monitor any identified active golden eagle nests for the first two days prior to any site

mobilization and construction activities to establish a behavioral baseline of the adults and any nestlings. In addition to direct impacts, such as nest destruction, nesting birds might be affected by noise, vibration, odors and movement of workers or equipment. The DB and/or Biological Monitor shall establish appropriate nest protection buffers of at least 1-mile for golden eagle during site mobilization and construction-related activities. The DB and/or Biological Monitor may expand or reduce the buffer, with the CPM's approval, in coordination with the CDFW and USFWS, based on specific site conditions, or in instances where there is sufficient topographic relief to protect the nest(s) from excessive noise or visual disturbance between the activities and the active nest(s). Depending on site characteristics, the sensitivity of the nest, and surrounding land uses, the DB and/or Biological Monitor may increase the buffer zone to prevent disturbance at the active nest site from maintenance and repair-related activities.

Monitoring. If active nests are detected, the DB(s) or Biological Monitor(s) shall monitor the nest at all times during any mobilization, ground disturbance, construction, or other activity that may disturb the nest. If signs of disturbance or distress are observed, the DB(s) or Biological Monitor(s) shall immediately implement adaptive measures to reduce disturbance, in coordination with the CPM. These measures could include, but are not limited to, increasing buffer size, halting disruptive site mobilization and/or construction activities in the vicinity of the nest until fledging is confirmed, or placement of visual screens or sound dampening structures between the nest and construction activity. The DB(s) or Biological Monitor(s) shall monitor the nest until it is determined that nestlings have fledged and dispersed or the nest is no longer active. Activities that might, in the opinion of the DB(s) or Biological Monitor, disturb nesting activities, shall be prohibited within the buffer zone until such a determination is made. If the DB(s) or Biological Monitor(s) determines that the nest is still at risk, the DB(s) or Biological Monitor(s) shall notify the CPM and a meeting with the project owner and the CPM shall be held to determine the best course of action to avoid nest abandonment or take of individual birds.

Verification: The project owner shall submit protocol-level survey methodologies to the CPM for review and approval and to CDFW for review at least 30 days prior to the start of surveys. The project owner shall submit the results of the pre-construction survey to the CPM and CDFW no more than 7 days after the survey has been completed. The project owner shall submit a final survey report to the CPM and CDFW no more than 30 days after the survey has been completed. The DB and/or Biological Monitor shall report any coordination with USFWS or CDFW regarding active golden eagle nests to the CPM within 24 hours.

BIO-14 Burrowing Owl Avoidance Measures The project owner shall implement the following measures to avoid impacts to breeding and foraging burrowing owls during site mobilization, construction, operation, and decommissioning:

1. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline Avoidance Surveys. No more than 14 days prior to beginning site mobilization and/or construction activities, the DB shall conduct at least two surveys using the methods described in the CDFW Staff Report on Burrowing Owl Mitigation, Appendix D (2012) or other appropriate method if agreed upon in writing by the CPM, at least seven days apart, with the final survey conducted no more than 48 hours prior to beginning site mobilization construction. The DB shall submit the results of the survey to the CPM prior to beginning site mobilization and/or construction. If changes in burrowing owl presence are detected (e.g., burrowing owls have moved onsite or changed burrow use), the DB shall contact the CPM by phone or email within 24 hours of the observation to consult on appropriate measures to avoid impacts of the project to the burrowing owl. If construction is delayed beyond 14 days, the survey shall be repeated. If suitable burrows or potential sign are observed but no owls are detected, the qualified biologist shall conduct focused follow-up surveys consistent with protocol-level methods to determine occupancy status prior to disturbance.
2. Burrow Map. If surveys for burrowing owl find sight or sign of the species a burrow map shall be prepared. The DB(s) shall provide a Keyhole Markup Language (KML) map and Geographic Information Systems (GIS) shapefiles to the CPM of all burrowing owl burrows found during the surveys conducted as required under Item 1 (Avoidance Surveys). The map shall show the details and locations of all burrowing owl sightings and potential, known, and nesting burrowing owl burrows as defined in the Avoidance section. The map shall include an outline of the project site, and any distinct work area(s) surveyed within the project site, title, north arrow, scale bar, and legend. The burrow map shall be updated whenever additional occupied burrows are observed, and updated maps shall be included in the monthly reports.
3. Burrowing Owl Buffers. The project owner has not obtained take coverage for western burrowing owls. Therefore, all project activities including site mobilization and construction shall be implemented in a manner that fully avoids take as defined by CESA. The project owner shall not conduct site mobilization and/or construction activities within 1,640 feet of any burrow or burrow complexes occupied by western burrowing owls. Should an occupied burrow or burrow complex be detected within 1,640 feet of project activities the project owner shall cease all activities within the 1,640-foot buffer and notify the CPM before the end of the workday. This buffer may be reduced with written approval from the CPM, in consultation with the Designated Biologist (DB) and the CDFW, where site-specific conditions demonstrate that a reduced buffer would not result in potential take of the species, consistent

with the CDFW Staff Report on Burrowing Owl Mitigation. These conditions may include, but are not limited to, low-intensity disturbance (e.g., vehicle travel or use of staging areas), the presence of effective visual or sound barriers between construction activities and occupied burrows, or other comparable circumstances. Should a buffer reduction be authorized the DB or approved BM shall conduct full time monitoring during project activities to ensure the western burrowing owls do not exhibit disturbance-related behaviors. If at any time western burrowing owls exhibit signs of disturbance or altered behavior, construction activities shall be modified or halted, and buffers shall be re-evaluated by the DB with the approval of the CPM and coordination with CDFW. The project owner shall notify with CPM before the end of the workday should any western burrowing owls be harmed or found deceased on the project site.

Verification: The DB shall provide the pre-construction survey results to the CPM and CDFW within 24 hours prior to beginning site mobilization and/or construction. The project owner shall submit pre-construction survey reports to the CPM for review and approval and to CDFW for review no more than 14 days after each survey effort has been completed. If surveys detect burrowing owls within 1,640 feet of proposed site mobilization and construction activities, the DB shall provide the CPM and CDFW documentation indicating that the 1,640-foot non-disturbance buffer has been implemented no less than 10 days prior to the start of any site mobilization and/or construction activities. If burrowing owls are detected during construction, the DB shall provide the CPM and CDFW documentation that the 1,640-foot non-disturbance buffer has been implemented as quickly as is safe and within the same workday.

If pre-construction surveys detect burrowing owls or active burrowing owl burrows within the project disturbance area, the project owner shall cease work and contact the CPM and CDFW for guidance.

During operation, the project owner shall include in the Annual Compliance Report an accounting of any burrowing owl documented on site, including copies of the Designated Biologist and/or Biological Monitor's field notes, any buffer zones erected, maps, additional avoidance and minimization measures implemented, and their perceived effectiveness. A copy of this information shall also be provided to CDFW.

BIO-15 Swainson's Hawk Surveys and Nest Protection Buffers If project activities, including site mobilization and construction, are scheduled during the nesting season for Swainson's hawks (March 1 to September 15), prior to beginning work on the project, the DB shall conduct surveys according to the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (SHTAC 2000) and prepare a report documenting the survey results. The project owner shall obtain the CPM's written approval of the

DB and/or Biological Monitor, per **BIO-1** and/or **BIO-3.** The survey report shall be submitted prior to starting project activities between March 1 and September 15. Survey methods shall be closely followed by starting early in the nesting season (late March to early April) to maximize the likelihood of detecting an active nest (nests, adults, and chicks are more difficult to detect later in the growing season because trees become less transparent as vegetation increases).

Surveys shall be conducted: 1) within a minimum 0.5-mile radius of the project site or a larger area if needed to identify potentially impacted active nests, unless otherwise approved by the CPM in writing, and 2) for at least the two survey periods immediately prior to initiating project-related site mobilization and construction activities. Surveys shall occur annually for the duration of the project.

If active Swainson's hawk nests are detected, the DB and/or Biological Monitor shall immediately notify the CPM and implement a 0.5-mile construction avoidance buffer around the nest until the nest is no longer active as determined by the DB, unless otherwise approved by the CPM in writing. Any detected nesting Swainson's hawk shall be monitored by the DB and/or Biological Monitor to ensure it is not disturbed during site mobilization and construction activities, unless otherwise approved in writing by the CPM. If work within the 0.5-mile buffer cannot be avoided the project owner shall consult with the CPM to avoid any potential for unauthorized take of Swainson's hawk without incidental take authorization.

Verification: The project owner shall submit pre-construction survey reports to the CPM for review and approval and to CDFW for review no more than 30 days after each survey effort has been completed. The project owner shall submit reports in the monthly report during nesting season and an annual report to the CPM and CDFW within 60 days of the end of nesting season.

BIO-16 White-Tailed Kite Nesting Preconstruction Surveys and Nest Protection Buffers If project activities occur during the white-tailed kite nesting season (January to October with peak nesting occurring from February to August), no more than thirty (30) days prior to activities commencing, including heavy equipment use and staging, the DB shall survey all accessible areas within 0.25-mile of the project site for white-tailed kite nests. The DB shall report white-tailed kite nests to the CPM within 24 hours.

Nest Protection Buffers. The DB shall establish appropriate nest protection buffers of at least 0.25-mile for white-tailed kite during project construction-related activities. Subject to the remainder of this condition, the DB and/or Biological Monitor may request the CPM's approval to expand or reduce the buffer, if deemed necessary based on specific site conditions, or in instances where there is sufficient topographic relief to protect the nest(s) from excessive

noise or visual disturbance between the activities and the active nest(s). Depending on site characteristics, the sensitivity of the nest, and surrounding land uses, the DB and/or Biological Monitor may increase the buffer zone to prevent disturbance at the active nest site from site mobilization and construction activities.

The DB and/or Biological Monitor shall monitor any white-tailed kite nests for the first two days prior to any site mobilization and construction activities to establish a behavioral baseline of the adults and any nestlings. In addition to direct impacts, such as nest destruction, nesting birds might be affected by noise, vibration, odors and movement of workers or equipment.

The DB and/or Biological Monitor shall monitor the behavior of any active white-tailed kite nest(s) within the buffer area at all times during site mobilization and construction activities and shall have authority to, and shall, order the cessation of all construction work if the birds exhibit abnormal nesting behavior which may cause reproductive failure (nest abandonment and loss of eggs and/or young). Activities within line of sight of the nest shall not resume until the DB and/or Biological Monitor has consulted with the CPM and both the DB and/or Biological Monitor and the CPM confirm that the bird's behavior has normalized, or the young have fledged and are foraging independently. If the DB and/or Biological Monitor continue to detect signs of disturbance or behavioral changes, the buffer shall be increased. If the DB and/or Biological Monitor determines that the nest is still at risk, the DB and/or Biological Monitor shall notify the CPM and a meeting with the project owner and the CPM shall be held to determine the best course of action to avoid nest abandonment or take of individuals.

Verification: The project owner shall submit the results of the pre-construction survey to the CPM and CDFW no more than 7 days after the survey has been completed. The project owner shall submit pre-construction survey reports to the CPM for review and approval and to CDFW for review no more than 30 days after the survey effort has been completed.

BIO-17 Bat Habitat Assessment and Surveys The DB and/or Biological Monitor(s) shall conduct a habitat assessment for listed bat species within a minimum of 30 days prior to the beginning of site mobilization activities. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with CDFW, pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

Surveys shall include a visual inspection of potential roosting features (e.g., cavities, crevices in wood and bark, exfoliating bark for colonial species, suitable canopy for foliage roosting species, and anthropogenic structures such as buildings, bridges, and culverts). If suitable habitat is found, it shall be flagged or otherwise clearly marked.

If any active maternity or hibernation roosts are identified within 100 feet of the construction work area, a CPM-approved DB and/or Biological Monitor shall establish site-specific protective buffers around roosts, sized with consideration for the species that are present and the time of year bats are roosting, as well as levels of construction noise and light emission from project activities.

Tree Removal. Trees shall be removed only under the following conditions: a) if the presence of bats is presumed or documented during the surveys described above, then removal shall use the two-step removal process detailed above, and shall only occur during seasonal periods of bat activity, from approximately March 1 through April 15 and September 1 through October 15; or b) after a qualified biologist conducts night emergence surveys or completes visual examination of roost features that establish absence of roosting bats. Two-step tree removal shall be conducted over two consecutive days, as follows: 1) the first day (in the afternoon), under the direct supervision and instruction by a qualified biologist with experience conducting two-step tree removal, limbs and branches shall be removed by a tree cutter using chainsaws only. Limbs with cavities, crevices, or deep bark fissures shall be avoided; and 2) the second day the entire tree shall be removed. If roosting bats are detected in anthropogenic structures that will be impacted by project activities, a bat avoidance and exclusion plan shall be implemented. The plan shall recognize that both maternity and winter roosting seasons are vulnerable times for bats and require exclusion outside of these times, generally between March 1 and April 15 or September 1 and October 15 when temperatures are sufficiently warm. Work operations shall cease if bats are found roosting within the project area and the CPM shall be consulted within 24 hours.

Verification: The project owner shall submit the results of the pre-construction survey to the CPM and CDFW no more than 7 days after the survey has been completed. The project owner shall submit the full pre-construction survey report to the CPM for review and approval and to CDFW for review no more than 30 days after the survey has been completed. If roosting bats are present the project owner shall notify the CPM and CDFW within 24 hours.

BIO-18 American Badger Avoidance and Minimization Measures The DB and/or Biological Monitor(s) shall conduct pre-construction surveys for American badger. Surveys shall be conducted by qualified biologists approved by the CPM, in coordination with CDFW, pursuant to **BIO-1** and/or **BIO-3**. These measures shall be included in the BRMIMP and implemented.

1. DB(s) and/or Biological Monitor(s) shall perform pre-construction surveys within 48 hours of ground disturbance to identify badger dens in the project disturbance area, including a 50-foot buffer zone within suitable habitat. If surveys need to be conducted more than 48 hours before construction, approval must be obtained from the CPM.

2. If dens are detected each den shall be classified as inactive, potentially active, or definitely active. If an American badger den is determined to be active, it shall be avoided by a minimum of 250 feet during the pupping season (March 1 through August 31) and by a minimum of 100 feet during the non-pupping season (September 1 through February 28). Avoidance buffers shall be established by the DB using staking, flagging, or other conspicuous materials. No project activities shall be permitted within the avoidance buffers. The DB and/or Biological Monitor(s) may modify the avoidance buffer distances based on the location of the den, specific site conditions, and nature of proposed work activities, with prior written CPM approval in coordination with CDFW. The avoidance buffer shall remain in place until the DB(s) confirms that the young have left the den or the den has been naturally abandoned or failed.
3. Passive Relocation. If an active American badger den cannot be avoided, the project owner shall submit an American Badger Relocation Plan to the CPM for review and approval and the CDFW for review and comment. The American Badger Relocation Plan shall address proposed eviction activities outside the pupping season, and shall include, at a minimum, the following:
    a. Methods and materials used for construction and maintenance of one-way eviction doors;
    b. Use of continuous camera monitoring of dens for at least five consecutive days to confirm that no American badger individuals are present and to ensure none are trapped during eviction;
    c. Specific timing of eviction activities;
    d. Design, materials, and methods used for construction and maintenance of artificial burrows and/or identification of location and discussion of preexisting, suitable, and unoccupied natural dens;
    e. Methods of den collapse; and
    f. Details regarding a “protect-in-place” option (i.e., evict but no collapse).

    Passive relocation during the pupping season shall not be authorized. Passive relocation outside the pupping season shall be evaluated on a case-by-case basis by the CPM, in consultation with CDFW.
4. Notification of Detection. The project owner or DB shall notify the CPM as well as CDFW within 24-hours if an American badger or any other special status mammal is detected during the surveys or during routine monitoring. The report shall include the number of animals detected, photos, and the location of the detection. Upon receiving notification, the CPM and CDFW may provide guidance for further action as appropriate to the species.
5. Monitoring. The DB and/or Biological Monitor(s) shall remain onsite throughout the duration of any project activities that are conducted within

200 feet of the edge of the avoidance buffer. The DB will have the authority to halt work, if it is determined that the animals are exhibiting increased levels of distress (e.g., displaying defensive behavior, pacing, leaving the den).

6. Report Mortalities and Serious Injuries Immediately. If any special status mammal species are found dead or injured during any project-related activities, the project owner or DB shall immediately notify the CPM and CDFW and shall provide written notification to CPM and CDFW within 48 hours. The CPM and CDFW shall review the activities resulting in mortality and determine if additional protective measures are required.
7. Reporting. A report documenting survey results, including surveyor name(s), date(s) of survey, location (with maps), weather conditions, and any observations or detections of sensitive mammals or their dens shall be prepared and submitted to the CPM and CDFW. In addition, a monitoring report that includes the location, description, and duration of the activities, any observations or detections of these species found during the surveys or project activities will be provided during monthly, quarterly, and annual compliance reporting.

Verification: The project owner shall submit the results of the pre-construction survey to the CPM and CDFW no more than 7 days after the survey has been completed. The project owner shall submit the pre-construction survey report to the CPM for review and approval and to CDFW for review no more than 30 days after each survey effort has been completed. If required, the project owner shall submit a draft American Badger Relocation Plan to the CPM for review and approval and to CDFW for review and comment. The final approved plan shall be submitted no less than 7 days prior to implementation.

BIO-19 Lake and Streambed Equivalency Conditions The project owner shall implement the following measures to avoid, minimize and mitigate potential direct and indirect impacts to jurisdictional waters of the state and to satisfy the requirements of California Fish and Game Code, sections 1600 through 1607.

1. Copies of Requirements, Stop Work Authority: The project owner shall provide a copy of the Streambed Impact Minimization Measures identified in this condition of certification and any other water related permit conditions to all contractors, subcontractors, and the project owner's project supervisors. Copies shall be maintained at each work site and be readily available during periods of active work and must be presented to the CPM or personnel from another state, federal, or local agency upon request. The CPM reserves the right to issue a stop work order after giving notice to the project owner, if the CPM, in consultation with CDFW, determines that the project owner is not in compliance with any of the requirements in this condition, including but not limited to the existence of any of the following:

a. The information provided by the project owner regarding streambed alteration is incomplete or inaccurate;

b. New information becomes available that was not known to the CEC CPM or the CDFW at the time of project certification; or

c. The project or project activities as approved in the Final Commission Decision have changed.

2. Provide Maps of Proposed Disturbance Areas. The project owner shall provide detailed maps of all proposed work areas that have the potential to result in temporary or permanent impacts to any jurisdictional feature to the CPM and CDFW prior to any site mobilization. This includes providing maps of work areas around each of the access roads, pull and tensioning sites, and staging areas or other work areas near the SID canal or Gibson Canyon Creek. Maps, at an approved scale of all proposed temporary and permanent work areas shall be provided to the CPM and CDFW prior to any site mobilization. At the conclusion of construction, the project owner shall provide a true-up of any jurisdictional features that were subject to temporary or permanent impacts.

3. Best Management Practices. The project owner shall comply with the following conditions to protect drainages near the project disturbance area:

   a. Silt Control Measures. Silt control measures shall be utilized throughout all phases of the project where silt and/or earthen fill threaten to enter jurisdictional waters. Silt control structures shall be monitored for effectiveness and shall be repaired or replaced as needed. Build-up of soil behind the fence shall be removed promptly and any breaches or undermined areas repaired at once.

   b. Erosion Control. All exposed/disturbed areas within the project site shall be stabilized to the greatest extent possible. Erosion control measures, such as silt fences, shall be used wherever silt laden water has the potential to leave the work site and enter jurisdictional waters. Erosion control measures shall be monitored during and after each storm event. Modifications, repairs and improvements to erosion control measures shall be made whenever it is needed. Materials used for erosion control or to repair erosion control shall not pose a risk to fish or wildlife. Monofilament shall not be used.

   c. Prohibition Against Use of Plastic Netting in Erosion Control Measures. The project owner shall not use temporary or permanent erosion control devices containing plastic netting, including photo- or bio-degradable plastic netting. Erosion control and landscaping specification shall only allow natural fiber for use in erosion control mats, blankets, and straw or fiber wattles.

   d. Clean Equipment Use. Prior to operations, all heavy equipment and vehicles shall be cleaned of all external materials, which may be

deleterious to aquatic life, wildlife, and riparian habitat (such as oil, grease, or hydraulic fluid). Cleaning shall not occur within a watercourse, stream channel or stream bank.

e. Storage and Stationary Equipment. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream, shall be positioned over drip pans. Stationary heavy equipment shall have suitable containment to handle a catastrophic spill/leak.

f. No Equipment Operated on Wet Bed of Creek. Equipment shall not be operated in wetted areas including but not limited to ponded, flowing, or wetland areas, except as may be necessary to construct coffer dams to divert stream flow and isolate the work site.

4. Hazardous Materials, Concrete, and Spills

a. Hazardous Substances. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project-related activities, shall be prevented from contaminating the soil and/or entering the waters of the state.

b. Toxic Materials. Any hazardous or toxic materials that could be deleterious to aquatic life that could be washed into a stream, or its tributaries shall be contained in watertight containers or removed from the project area.

c. Hazardous Materials. Debris, soil, silt, bark, slash, sawdust, rubbish, creosote-treated wood, raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, wildlife, or riparian habitat resulting from the project related activities shall be prevented from contaminating the soil and/or entering jurisdictional waters.

d. Spill Amelioration and Containment. The project owner shall begin the cleanup of all spills immediately. The CPM shall be notified immediately by the project owner of any spills within the stream zone that exceed 5 gallons and shall be consulted regarding clean-up procedures. The project owner shall have all spill cleanup equipment on site during construction.

All activities performed in or near a stream shall have absorbent materials designated for spill containment and cleanup activities on-site for use in an accidental spill. In the event of a spill the project owner shall immediately notify the CPM, CDFW, RWQCB, and the California Emergency Management Agency at 1-800-852-7550, or most current phone number, and immediately initiate the cleanup activities.

e. Staging and Storage. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the stream

channel and banks, avoiding areas of concentrated ground squirrel burrows suitable for use by California tiger salamander or burrowing owls. Stationary equipment such as motors, pumps, generators, compressors and welders, located within or adjacent to the stream shall be positioned over drip pans. Any equipment or vehicles driven and/or operated within or adjacent to the stream must be checked and maintained daily, to prevent leaks of materials that if introduced to water could be deleterious to aquatic life. Vehicles must be moved away from the stream prior to refueling and lubrication.

f. Spoils Placement. Spoils shall be placed in a stable area above the ordinary high water mark avoiding areas of concentrated ground squirrel burrows suitable for use by burrowing owls or other wildlife species.

5. Horizontal Directional Drilling. In order to reduce impacts to biological resources should hydraulic fracture occur, the project owner shall make reasonable efforts to conduct project work during months in which the channel does not have water present or has low water levels.

   No less than 15 days prior to the initiation of drilling activities, the project owner shall submit a Frac-Out Contingency Plan for CPM review and approval. The Frac-Out Plan shall include a geotechnical report which shall include, but not be limited to, information regarding the number of geotechnical test bores, location of each test bore; diameter and depth of each test bore; and the soil conditions, grain-size distribution, water content, etc. of each test bore. Additionally, the Frac-Out Contingency Plan shall include information pertaining to the risk of hydraulic fracture. The project owner shall adhere to the conditions and plans set forth in the Frac-Out Contingency Plan, or as amended if approved by the CPM in writing. If a frac-out or spill occurs, the project owner shall notify the California Office of Emergency Services State Warning Center (CalOES) at 1-800-852-7550 and the CPM.

6. Drilling Materials. At no time shall drill cuttings, drilling mud, and/or materials or water contaminated with bentonite, or any other substance deemed deleterious to fish and wildlife, be allowed to enter the stream or wetland or be placed where they may be washed into the stream or wetland. Any contaminated water/materials from the drilling or other project activities shall be pumped into a holding facility and removed for proper disposal.

Verification: Maps of all proposed temporary and permanent work areas shall be provided to the CPM no less than 30 days prior to any site mobilization. At the conclusion of construction, the project owner shall provide a true-up of any jurisdictional features that were subject to temporary or permanent impacts the CPM no more than 30 days following the cessation of construction along the generation tie- line in the Construction Final Report. No less than 15 days prior to the initiation of drilling activities, the project owner shall submit a Frac-Out Contingency Plan for CPM review and approval.

BIO-20 Swainson's Hawk Foraging Habitat Compensatory Mitigation The project owner shall fulfill the following requirements to mitigate impacts to Swainson's hawk foraging habitat.

The project owner shall either:

1. Purchase 16.1 acres of Swainson's hawk foraging mitigation or conservation bank credits, at a location within Solano County approved in advance by the CPM, in consultation with CDFW;
2. Shall provide for both the permanent protection and management of 16.1 acres of Habitat Management (HM) lands pursuant to Item 3 (Habitat Management Land Acquisition and Protection) and the calculation and deposit of the management funds pursuant to Item 5 (Endowment Fund). The amount of mitigation required shall be calculated based on the project's final direct permanent and temporary loss of suitable Swainson's foraging habitat, as approved by the CPM, in consultation with CDFW.

The purchase of mitigation or conservation bank credits or permanent protection and funding for perpetual management of HM lands must be complete before starting project activities, or within 18 months of the date of the site mobilization, if Security is provided pursuant to Security (Item 11) below for all uncompleted obligations.

1. Cost Estimates. For the purposes of determining the Security amount, it is estimated the cost for the CPM or its contractors to complete acquisition, protection, and perpetual management of the HM lands is as follows:
    a. Land acquisition costs for HM lands identified in Item 3 (Habitat Management Lands Acquisition and Protection) below, estimated at **$25,000.00**/acre for 16.1 acres: **$402,500.00**. Land acquisition costs are estimated using local fair market current value per acre for lands with habitat values meeting mitigation requirements.
    b. All other costs are necessary to review and acquire the land in fee title and record a conservation easement as described below in Item 3b (Conservation Easement): **$10,000.00**.
    c. Start-up costs for HM lands, including site protection and enhancement costs as described in Item 3f (Start-up Activities) below, estimated at **$140,000.00**.
    d. Interim management period funding as described in Item 4 (Interim Management) (Initial and Capital)) below, estimated at **$150,000.00**.
    e. Long-term management funding as described in Item 5 (Endowment Fund) below, estimated at **$104,650.00**. Long-term management funding is estimated initially for the purpose of providing Security to ensure implementation of HM lands management.

f. Related transaction fees including but not limited to account set-up fees, administrative fees, title and documentation review and related title transactions, expenses incurred from other state agency reviews estimated at **$3,400.00**.

g. All costs associated with the CPM engaging an outside contractor to complete the mitigation tasks, including but not limited to acquisition, protection, and perpetual funding and management of the HM lands and restoration of temporarily disturbed habitat. These costs include but are not limited to the cost of issuing a request for proposals, transaction costs, contract administration costs, and costs associated with monitoring the contractor's work **$100,000.00**.

2. Conservation or Mitigation Bank Credits. If the project owner elects to purchase credits to complete Swainson's hawk foraging compensatory mitigation obligation, then the project owner shall purchase 16.1 acres of Swainson's hawk foraging habitat credits from a conservation or mitigation bank approved in advance by the CPM prior to initiating project activities, or no later than 18 months from the start of site mobilization, if Security is provided pursuant to Item 11 (Security) below. Prior to the purchase of credits, the project owner shall obtain CPM approval to ensure the conservation or mitigation bank is appropriate to compensate for the impacts of the project. The project owner shall submit to the CPM a copy of the Bill of Sale(s) and Payment Receipt prior to initiating site mobilization or within 18 months from start of site mobilization, if Security is provided.

   If credits within Solano County or within the applicable service area are unavailable, and the project owner seeks to purchase Swainson's hawk foraging habitat credits from a bank located outside the service area, compensatory mitigation shall be provided at a minimum 2:1 ratio for permanent impacts, based on 16.1 acres of impact. The project owner shall demonstrate to the satisfaction of the CPM, in consultation with CDFW, that no suitable in-service-area credits are available prior to approval of any out-of-service-area purchase.

3. Habitat Management Lands Acquisition and Protection. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, the project owner shall:

   a. Fee Title. Provide funding for the acquisition in fee title of HM lands with suitable Swainson's foraging habitat, as approved by the CPM, in consultation with CDFW.

   b. Conservation Easement. Provide for the permanent protection of Swainson's hawk foraging habitat via the placement of a conservation easement over the HM lands granted in favor of an entity that meets the requirements of Civil Code section 815.3. The project owner shall obtain

written approval from the CPM, in consultation with CDFW, of any conservation easement before its execution or recordation. No conservation easement shall be approved by the CPM unless it complies with Civil Code sections 815-816, as amended, and Government Code sections 65965-65968, as amended and includes provisions expressly addressing Government Code sections 65966(j) and 65967(e). Because the "doctrine of merger" could invalidate the conservation interest, under no circumstances can the fee title owner of the HM lands serve as grantee for the conservation easement.

c. HM Lands Approval. The project owner shall obtain CPM written approval of the HM lands, in consultation with CDFW, before acquisition and/or transfer of the land by submitting, at least 90 days before acquisition and/or transfer of the HM lands, documentation identifying the land to be purchased or property interest conveyed to an approved entity as mitigation for the project's impacts on Swainson's hawk foraging habitat.

d. HM Lands Documentation. The project owner shall provide a recent preliminary title report, Phase I Environmental Site Assessment, and other necessary documents (please contact CPM for document list). All documents conveying HM lands and all conditions of title are subject to approval from the CPM; and if applicable, the Wildlife Conservation Board, and the Department of General Services.

e. Land Manager. Designate both an interim and long-term land manager, approved by the CPM, in consultation with CDFW. The interim and long-term land managers may, but need not, be the same. The interim and/or long-term land managers may be the landowner or another party. The land manager shall prepare a draft management plan for CPM review and approval, in consultation with CDFW, and written approval as part of the HM lands acquisition process. The project owner shall notify the CPM of any subsequent changes in the land manager within 30 days of the change. The grantee for the conservation easement cannot serve as the interim or long-term manager without the express written authorization of the CPM, in consultation with CDFW.

f. Start-up Activities. Provide for the implementation of start-up activities, including the initial site protection and enhancement of HM lands, once the HM lands have been approved by the CPM. Start-up activities include at a minimum: (1) conducting a baseline biological assessment and land survey report within four months of recording or transfer; (2) developing and transferring Geographic Information Systems (GIS) data if applicable; (3) establishing initial fencing; (4) conducting litter removal; (5) conducting initial habitat restoration or enhancement, if applicable; and (6) installing signage.

4. Interim Management (Initial and Capital). Provide for the interim management of the HM lands. The project owner shall ensure that the interim land manager implements the interim management of the HM lands as described in the final management plan and conservation easement approved by the CPM, in consultation with CDFW. The interim management period shall be a minimum of three years from the date of HM land acquisition and protection and full funding of the Endowment and includes expected management following start-up activities. Interim management period activities described in the final management plan shall include fence repair, continuing trash removal, site monitoring, and vegetation and invasive species management. The project owner shall either (1) provide Security to the CPM for the minimum of three years of interim management that the land owner, the project owner, or land manager agrees to manage and pay for at their own expense, (2) establish an escrow account with written instructions approved in advance in writing by the CPM to pay the land manager annually in advance, or (3) establish a short-term enhancement account with a CPM-approved entity for payment to the land manager.

5. Endowment Fund. If the project owner elects to provide for the acquisition, permanent protection, and perpetual management of HM lands to complete compensatory mitigation obligations, then the project owner shall ensure that the HM lands are perpetually managed, maintained, and monitored by the long-term land manager as described in this condition of certification, the conservation easement, and the final management plan approved by the CPM. After obtaining CPM approval, in consultation with CDFW, of the HM lands, the project owner shall provide long-term management funding for the perpetual management of the HM lands by establishing a long-term management fund (Endowment). The Endowment is a sum of money, held in a CPM-approved (in consultation with CDFW) fund that is permanently restricted to paying the costs of long-term management and stewardship of the mitigation property for which the funds were set aside, which costs include the perpetual management, maintenance, monitoring, and other activities on the HM lands consistent with the condition of certification, the conservation easement, and the management plan required by Item 3e (Land Manager). Endowment as used in the Certification shall refer to the endowment deposit and all interest, dividends, other earnings, additions and appreciation thereon. The Endowment shall be governed by this license, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended. After the interim management period, the project owner shall ensure that the designated long-term land manager implements the management and monitoring of the HM lands according to the final management plan. The long-term land manager shall be obligated to manage and monitor the HM lands in perpetuity to preserve their conservation values in accordance with this license, the conservation

easement, and the final management plan. Such activities shall be funded through the Endowment.

6. Identify an Endowment Manager. The Endowment shall be held by the Endowment Manager, which shall be a qualified entity pursuant to Government Code sections 65965-65968, as amended.

    a. The project owner shall submit to the CPM for review and approval, a written proposal that includes: (i) the name of the proposed Endowment Manager; (ii) whether the proposed Endowment Manager is a governmental entity, special district, nonprofit organization, community foundation, or congressionally chartered foundation; (iii) whether the proposed Endowment Manager holds the property or an interest in the property for conservation purposes as required by Government Code section 65968(b)(1) or, in the alternative, the basis for finding that the Project qualifies for an exception pursuant to Government Code section 65968(b)(2); and (iv) a copy of the proposed Endowment Manager's certification pursuant to Government Code section 65968(e).

7. Calculate the Endowment Funds Deposit. After obtaining CPM written approval, in consultation with CDFW, of the HM lands, long-term management plan, and Endowment Manager, the project owner shall prepare an endowment assessment (equivalent to a Property Analysis Record (PAR)) to calculate the amount of funding necessary to ensure the long-term management of the HM lands (Endowment Deposit Amount). Note that the endowment for the easement holder should not be included in this calculation. The project owner shall submit to the CPM, in consultation with CDFW, for review and approval the results of the endowment assessment before transferring funds to the Endowment Manager.

    a. Capitalization Rate and Fees. The project owner shall obtain the capitalization rate from the selected Endowment Manager for use in calculating the endowment assessment and adjust for any additional administrative, periodic, or annual fees.

    b. Endowment Buffers/Assumptions. The project owner shall include in the endowment assessment assumptions the following buffers for endowment establishment and use that will substantially ensure long-term viability and security of the Endowment:

    c. 10 Percent Contingency. A 10 percent contingency shall be added to each endowment calculation to hedge against underestimation of the fund, unanticipated expenditures, inflation, or catastrophic events.

    d. Three Years Delayed Spending. The endowment shall be established assuming spending will not occur for the first three years after full funding.

e. Non-annualized Expenses. For all large capital expenses to occur periodically but not annually such as fence replacement or well replacement, payments shall be withheld from the annual disbursement until the year of anticipated need or upon request to Endowment Manager and the CPM, in consultation with CDFW.

8. Transfer Long-term Endowment Funds. The project owner shall transfer the long-term endowment funds to the Endowment Manager upon the CPM's approval of the Endowment Deposit Amount identified above.

9. Management of the Endowment. The approved Endowment Manager may pool the Endowment with other endowments for the operation, management, and protection of HM lands for local populations of Swainson's Hawk but shall maintain separate accounting for each Endowment. The Endowment Manager shall, at all times, hold and manage the Endowment in compliance with this Certification, Government Code sections 65965-65968, as amended, and Probate Code sections 18501-18510, as amended.

   Notwithstanding Probate Code sections 18501-18510, the Endowment Manager shall not make any disbursement from the Endowment that will result in expenditure of any portion of the principal of the endowment without the prior written approval of the CPM in its sole discretion. The project owner shall ensure that this requirement is included in any agreement of any kind governing the holding, investment, management, and/or disbursement of the Endowment funds.

   Notwithstanding Probate Code sections 18501-18510, if the CPM, in consultation with CDFW, determines in its sole discretion that an expenditure needs to be made from the Endowment to preserve the conservation values of the HM lands, the Endowment Manager shall process that expenditure in accordance with directions from the CPM. The Endowment Manager shall not be liable for any shortfall in the Endowment resulting from the CPM's decision to make such an expenditure.

10. Security: The project owner may proceed with project activities only after the project owner has ensured the funding (Security) to complete any activity required by the Item 3 (Habitat Management Land Acquisition and Protection) that has not been completed before project activities begin. Permittee shall provide Security as follows:

    a. Security Amount. The Security shall be in the amount of **$910,550.00** or in the amount identified in Item 1 (Cost Estimates) specific to the obligation that has not been completed. This amount is determined by the CPM and is based on cost estimates which are sufficient for the CEC or its contractors to complete land acquisition, property enhancement, startup costs, initial management, long-term management, and monitoring.

b. Security Form. The Security shall be in the form of an irrevocable letter of credit or another form of Security approved in advance in writing by the CPM, in consultation with CDFW.

c. Security Timeline. The Security shall be provided to the CPM before starting site mobilization.

d. Security Holder. The Security shall be held by the CPM or in a manner approved in advance in writing by the CPM.

e. Security Transmittal. The project owner shall transmit security to the CPM by way of an approved instrument such as an escrow agreement, irrevocable letter of credit, or other form of security approved by the CPM.

f. Security Drawing. The Security shall allow the CPM to draw on the principal sum if the CPM, in its sole discretion, determines that the project owner has failed to comply with this Condition of Certification.

g. Security Release. The Security (or any portion of the Security then remaining) shall be released to the project owner after the CPM has conducted an on-site inspection and received confirmation that all secured requirements have been satisfied, as evidenced by either:

   i. Copy of Bill of Sale(s) and Payment Receipt(s) or Credit Transfer Agreement for the purchase of Swainson's Hawk foraging habitat credits. OR

   ii. Written documentation of the acquisition of the HM lands.

   iii. Copies of all executed and recorded conservation easements.

   iv. Written confirmation from the approved Endowment Manager of its receipt of the full Endowment.

Verification: The project owner shall provide verification that the required acquisition, protection and transfer of all HM lands, and record any required conservation easements no later than 18 months from the date of start of site mobilization, even if a security is provided. If a Security is provided, it shall be provided no later than 30 days prior to the start of site mobilization.

The project owner shall submit to the CPM for review and approval, and to CDFW for review and comment, all HM lands due diligence documentation required for HM lands approval, including but not limited to a preliminary title report, Phase I Environmental Site Assessment, and any other documents required by the CPM, no later than 12 months after the date of the start of site mobilization, if providing a Security.

The project owner shall provide the draft long-term management plan to the CPM for review and approval and to CDFW for review and comment no later than 60 days prior to acquisition and/or transfer of the HM lands, as part of the HM

lands approval process construction. The project owner shall submit the final long-term management plan to the CPM and CDFW no later than 7 days prior to recordation of the conservation easement construction.

BIO-21 Post BESS Fire Monitoring and Management Plan The project owner shall develop a Post BESS Fire Monitoring and Management Plan (PBFMMP), which is to be implemented in the event of a "BESS FIRE" defined as a confirmed thermal runaway within a battery module of the project that results in sustained combustion or open flame. The project owner shall provide the draft PBFMMP to the CPM for review and approval. No site mobilization or construction activities may occur prior to approval of the final PBFMMP by the CPM. The PBFMMP shall be prepared in consultation with the DB and shall include the following:

1. Baseline Data. Pre-operation sediment sampling locations shall be determined as a result of specific plume analysis performed for the project and approved by the CPM within a radius of the project that could be reasonably affected by a BESS FIRE event. The sampling shall include a test for the expected post fire constituents, as identified in the BESS manufacturer's Large Scale Fire Test Report. In addition, known seeps and springs within a radius of the project that could reasonably be affected by a BESS FIRE event, are publicly accessible, and support habitat of a special status species, as approved by the CPM, shall be sampled for water quality and chemical constituents;
2. Toxicity Thresholds. Identify the established regulatory or peer reviewed toxicity thresholds for each chemical constituent of concern to vegetation and wildlife. Where thresholds are not established, the PBFMMP shall identify a scientifically defensible evaluation framework to be submitted for review and approval by the CPM, in coordination with the USFWS, CDFW, and Department of Toxic Substances Control (DTSC);
3. Post Fire Monitoring. Include post fire monitoring requirements including an initial assessment within 2-weeks of the fire and a program of quarterly testing of the same locations used for baseline data collection, for the first year if battery-related contaminants are detected above established baseline levels or toxicity threshold levels in water or sediment;
4. Species Specific Monitoring. Describe post fire monitoring to evaluate potential impacts to sensitive vegetation and wildlife that are attributed to the BESS FIRE. The monitoring design shall evaluate burn severity and chemical contamination; track vegetation recovery and if there are any increases in non-native vegetation; document species presence and health post fire include observations of changes in nesting behavior or use of habitat; assess soil erosion and soil stability in any areas subject to remediation. The monitoring design shall also include surveys for special status species, including burrowing owls. Include protocols for health checks of wildlife where possible and mechanisms to provide veterinarian care for injured wildlife;

5. Habitat Recovery Metrics and Decontamination Methods. Provide a detailed description of the measures and metrics that will be used to assess health impacts to plants and wildlife, evaluate impacts to important foraging habitat and what decontamination methods shall be taken to avoid or mitigate impacts on each special-status species potentially impacted by a BESS FIRE. The decontamination methods shall include containment of contaminated storm and firefighting wastewater;
6. Restoration, Additional Mitigation, and Adaptive Management. If impacts to plants and wildlife are confirmed and attributed to the BESS FIRE, identify methods for restoration and post fire mitigation if needed outside of areas already subject to approved mitigation ratios, including the acquisition of additional habitat at a 1:1 ratio should soils be contaminated above threshold limits and/or become unavailable to wildlife after the fire, or as otherwise approved by the CPM, in coordination with the CDFW and USFWS. Include methods for collaborating with CDFW, USFWS, and CPM during these activities; and
7. Reporting. Identify all pre-fire testing locations on a map, at an approved scale (typically 1:6,000 or other scale with CPM approval). Identify post fire plume direction(s) and areas where soil testing indicates chemical constituents above baseline and at or above toxicity levels. Provide a detailed report of remedial actions taken during and post fire of all monitoring and restoration activities. Include the results of field surveys, animal health assessments, and observations of damaged vegetation or other fire related factors.

Verification: The project owner shall submit the draft PBFMMP to the CPM for review and approval at least 90 days prior to start of the delivery of any BESS battery components. The project owner shall provide the final PBFMMP to the CPM at least 30 days prior to start of the delivery of any BESS battery components.

5.2.6 Recommended Mitigation Measures

For the non-jurisdictional project components, the following mitigation measures can and should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations title 14, section 15091(a)(2). If surveys or subsequent analysis indicate potential for “take” of state or federally listed species, PG&E shall coordinate with the CDFW and/or USFWS to determine the necessity for incidental take coverage (e.g., Incidental Take Permit or Biological Opinion) and obtain such coverage prior to ground disturbing activities in the potentially affected area. Revisions to the PG&E provided measures are shown in bold underline for additions and strikethrough for deletions.

MM BIO-1 Annual Training (FP-01) Hold annual training on habitat conservation plan requirements for employees and contractors performing covered activities in the Plan Area that are applicable to their job duties and work.

MM BIO-2 Standard Construction Practices The following standard construction practices will be implemented to reduce the potential for environmental impacts:

- Parking (FP-02): Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).
- Use Existing Roads (FP-03): Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.
- Off Road Access (FP-04): Locate off-road access routes and work sites to minimize impacts on plants, shrubs, and trees, small mammal burrows, and unique natural features (e.g., rock outcrops).
- Equipment Inspection (FP-06): Minimize potential for covered species to seek refuge or shelter in pipes and culverts. Inspect pipes and culverts, of diameter wide enough to be entered by a covered species that could inhabit the area where pipes are stored, for wildlife species prior to moving pipes and culverts. Immediately contact a biologist if a covered species is suspected or discovered.
- Vehicle Speed (FP-07): Vehicle speeds on unpaved roads will not exceed 15 miles per hour.
- Trash, Firearms, Fire, Hunting, and Pets (FP-08): Prohibit trash dumping, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations) at work sites.
- Fire Safety (FP-09): During fire season in designated State Responsibility Areas, equip all motorized equipment with federally approved or state-approved spark arrestors. Use a backpack pump filled with water and a shovel and fire-resistant mats and/or windscreens when welding. During fire "red flag" conditions as determined by Cal Fire, curtail welding. Each fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C. Clear parking and storage areas of all flammable materials.
- Minimize Footprint and Time (FP-10): Minimize the activity footprint and minimize the amount of time spent at a work location to reduce the potential for take of species.
- Erosion and Sediment Control (FP-11): Utilize standard erosion and sediment control BMPs (pursuant to the most current version of PG&E's *Stormwater Field Manual for Construction Best Management Practices*) to prevent construction site runoff into waterways.

- Stockpile Management (FP-12): Stockpile soil within established work area boundaries and locate stockpiles so as not to enter water bodies, stormwater inlets, other standing bodies of water. Cover stockpiled soil prior to precipitation events.
- Trench/Hole Inspection and Escape Ramps (FP-13): Fit open trenches or steep-walled holes with escape ramps of plywood boards or sloped earthen ramps at each end if left open overnight. Field crews will search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any wildlife are found, a biologist will be notified and will relocate the species to adjacent habitat or the species will be allowed to naturally disperse, as determined by a biologist.
- Revegetation (FP-14): If the covered activity disturbs 0.1 acres or more of habitat for a covered species in grasslands, the field crew will revegetate the area with a commercial "weed free" seed mix.
- Refueling (FP-15): Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools, and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas.
- Wetland Buffers (FP-16/Wetland-2): Identify wetlands, ponds, and riparian areas and establish buffers. Maintain a buffer of 50 feet around wetlands, ponds, and riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the Biologist or HCP administrator to minimize impacts. These measures include flagging access, requiring foot access, restricting work until the dry season, requiring a biological monitor during the activity, or excavating burrows in ROWs where trenching will occur. Activities must maintain the downstream hydrology to the wetland, pond, or riparian area. Additional minimization measures may be implemented with prior concurrence from USFWS.
- Tree Felling and Removal (FP-17): Directionally fell trees away from an exclusion zone, if an exclusion zone has been defined. If this is not possible, remove the tree in sections. Avoid damage to adjacent trees to the extent possible. Avoid removal of snags and conifers with basal hollows, crown deformities, and/or limbs over 6 inches in diameter.
- Active Nests (FP-18): Nests with eggs and/or chicks will be avoided: contact a Biologist, Land Planner or the Avian Protection Program manager for further guidance.
- HCP Administrator Minor New-1: For minor new construction activities under 2 miles in length, excluding upgrades and replacements, PG&E will notify the

USFWS of the anticipated project and provide a summary of the activity. The summary will include information on HCP measures to avoid, minimize and mitigate the effects of the project on covered species, confirm there is adequate take authorization remaining for the covered species, and confirm that activity does not have a reasonably certain likelihood of take of listed non-covered species. If USFWS has concerns about the work they will notify PG&E within 5 business days to resolve the concerns within 10 days.

MM BIO-3 Swainson's Hawk Avoid ground disturbing work during nesting timeframes for Swainson's hawk approximately March 1 to August 15.

Additional Staff Recommended Mitigation Measures

MM BIO-4 General Impact Avoidance and Minimization Measures

- Invasives: seed mixtures/straw used within natural vegetation will be either rice straw or weed-free straw. Clean all vehicles, equipment, clothing, etc. of material potentially containing noxious weeds/seeds prior to entering and exiting work locations.
- Wildlife Handling: no wildlife will be handled or removed from activity areas without CPUC approval, in coordination with CDFW and/or USFWS, if applicable.
- Dead or Injured Listed Species: personnel will be required to report any accidental death or injury of a listed species or the finding of any dead or injured listed species to a qualified biologist. Notification of CDFW and/or USFWS of any accidental death or injury of a listed species shall be done in accordance with standard reporting procedures.
- Consistent with APLIC Guidelines: generation tie-line and all associated components shall be designed, installed, and maintained in accordance with the Avian Power Line Interaction Committee's (APLIC's) Suggested Practices for Avian Protection on Power Lines (APLIC 2006) and Reducing Avian Collisions with Power Lines (APLIC 2012), or most recent APLIC guidance, to reduce the likelihood of large bird electrocutions and collisions.

MM BIO-5 Biological Monitor During Construction A biological monitor will be onsite during ground disturbing activities, or other activities with the potential to impact sensitive biological resources to minimize impacts to sensitive biological resources. Before the start of work each morning, the biological monitor will check under all equipment and stored supplies left in the work area overnight near suitable habitat for listed species with a potential to occur in the area. The monitor will have the authority to stop work or determine alternative work practices in consultation with agencies and construction personnel as appropriate, if site mobilization and construction activities are likely to impact sensitive biological resources. The biological monitor will document monitoring

activities in a daily log summarizing site mobilization and construction activities and environmental compliance.

MM BIO-6 Burrowing Owl and American Badger Within 48 hours prior to any habitat modification, a qualified biologist knowledgeable in the identification of all special-status wildlife species will conduct a pre-construction survey of areas proposed for disturbance and a 50-foot buffer for American badger, and a 500-foot buffer for burrowing owl (where legally accessible), to determine if any special-status species are present. If the pre-construction survey determines that burrowing owl are present, the following measures will be implemented:

1. If burrowing owl or their sign are identified on-site, CDFW will be notified to determine if take coverage may be necessary, and non-disturbance buffers will be established around active burrows during site mobilization and construction activities. Buffers for active burrows will be as follows:

		Level of Disturbance		
Location	**Time of Year**	**Low**	**Med**	**High**
Nesting Sites	April 1–Aug 15	656 feet	1640 feet	1640 feet
Nesting Sites	Aug 16–Oct 15	656 feet	656 feet	1640 feet
Nesting sites	Oct 16–Mar 31	164 feet	328 feet	1640 feet

2. If a potential American badger den is discovered the qualified biologist will establish a 50-foot buffer. If a known American badger den (one that shows evidence of current use or is known to have been used in the past) is discovered, a buffer of at least 50 feet will be established using fencing. If a natal den is discovered, it will be flagged for avoidance with a 200 feet non-disturbance buffer. The qualified biologist will notify CDFW. Buffer zones will be considered environmentally sensitive areas, and entry will be restricted. The required buffers will only be reduced pending coordination with CPUC and CDFW.

MM BIO-7 Golden Eagle If work occurs during the golden eagle nesting season (December 15 to August 31), a qualified biologist will conduct surveys within a 1-mile radius of the project work limits no more than 30 days before starting activities. The qualified biologist will submit protocol-level survey methodologies to CPUC for review and approval at least thirty (30) days prior to the start of surveys. It is recommended that the qualified biologist coordinates with USFWS and CDFW to discuss implementation of golden eagle monitoring protocol to minimize duplicate efforts by others in the area. If eagles or active nests are found within 1 mile, work may only proceed after a USFWS and CDFW approved mitigation plan is established.

MM BIO-8 Bat Tree Removal Measures To avoid and minimize impacts to western red bat during tree removal, the following measures will be implemented:

1. A qualified bat biologist will conduct pre-construction surveys for roosting bats within 200 feet of the project area at least 30 days prior to tree removal. The biologist shall assess trees for potential roosting habitat and conduct a visual inspection of potential roosting features (e.g., cavities, crevices in wood and bark, exfoliating bark, foliage canopy, etc.) consistent with CDFW bat habitat assessment guidance. If suitable habitat is found, it will be flagged or otherwise marked. If no suitable roosting habitat is identified, tree removal may proceed without further measures for bats. If habitat is present, additional measures will be required, as detailed below.
2. If western red bat are present, tree removal will be scheduled outside of the western red bat maternity season (March 1 - August 31) and outside the winter torpor period (December – February) whenever feasible. If any active maternity or hibernation roosts are identified within 100 feet of the construction work area, a qualified bat biologist will establish site-specific protective buffers sized with consideration for species present, season, and levels of construction noise and light, consistent with CDFW guidance. If tree removal must occur during the maternity season, a qualified bat biologist will confirm the absence of active maternity roosts immediately prior to removal. If tree removal must occur in winter, a hibernation survey will be conducted to assess bat occupancy and determine appropriate mitigation measures.
3. If potential roosting habitat is present, two-step tree removal will be conducted over two consecutive days, as follows.
4. During the first phase, in the afternoon, lower tree limbs will be trimmed under the direct supervision of a qualified bat biologist, and limbs with cavities, crevices, or deep bark will be avoided. The trees will be left standing overnight to allow remaining bats to vacate.
5. During the second phase, full tree removal will take place the following morning to prevent bats from returning. Tree cutters will inspect trees immediately before felling to ensure no bats remain.
6. If bats are detected, trees with confirmed day roosts will be removed incrementally, beginning with non-roost trees nearby to encourage natural dispersal, consistent with CDFW's two-step removal intent.
7. If trees must be removed between December and February, a qualified bat biologist will assess occupancy and recommend exclusion measures consistent with CDFW's bat avoidance and exclusion guidance, if needed. A qualified bat biologist will monitor tree removal activities and document any observed bat presence. A post-removal survey report will be submitted to the appropriate regulatory agencies, detailing survey findings, mitigation measures, and any observed bat activity.

MM BIO-9 Crotch's Bumble Bee A CDFW approved biologist will conduct pre-construction surveys and daily monitoring for Crotch's bumble bee in suitable

habitat within the project area, including a 50-foot buffer, following CDFW non-invasive protocols. If bees or nests are detected, the qualified biologist will coordinate with CPUC and CDFW to acquire take authorization consistent with CESA requirements.

MM BIO-10 Monarch Butterfly No more than 2 days prior to the initiation of site mobilization and/or construction-related vegetation trimming or removal, a qualified biologist and/or Biological Monitor surveys all areas of potentially suitable habitat for monarch butterfly larval host plants and nectar plants. If host plants are found, the DB will survey all host plants for monarch eggs, larvae, and pupae. If no eggs, larvae, or pupae are found, plants may be removed during the same survey window. If eggs, larvae, or pupae are present, host plants will be protected in place until the qualified biologist has determined that the breeding season has concluded, or coordination with USFWS occurs. It is recommended, to the extent feasible, that milkweed removal be avoided until after the plant has gone to seed.

5.2.7 References

APLIC 2006 – Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006. Edison Electric Institute, APLIC, and the California Energy Commission. 2006. Accessed online at: https://www.aplic.org/uploads/files/2643/SuggestedPractices2006(LR-2).pdf

APLIC 2012 – Avian Power Line Interaction Committee (APLIC). Reducing Avian Collisions with Power Lines: The State of the Art in 2012. Edison Electric Institute and APLIC. 2012. Accessed online at: https://www.aplic.org/uploads/files/15518/Reducing_Avian_Collisions_2012watermarkLR.pdf

Audubon 2026 – Important Bird Areas - National Audubon Society [Online software]. National Audubon Society. Accessed online at: https://gis.audubon.org/portal/apps/sites/?_gl=1*1jbxej2*_gcl_au*MTYzMDgwMTkyMS4xNzY1MjIwNDMw*_ga*MTY4MTMxNjk3OS4xNzY1MjIwNDMw*_ga_X2XNL2MWTT*czE3NjUyMjA0MjkkbzEkZzAkdDE3NjUyMjA0MjkkajYwJGwwJGgw#/nas-hub-site

Avery et al. 1978 – Avery, M.L., Springer, P.F., and Dailey, N.S. Avian Mortality at Man-Made Structures: An Annotated Bibliography. U.S. Fish and Wildlife Service, Biological Services Program. July 1978.

BAHCP 2017 – Pacific Gas and Electric Company. PG&E Bay Area Habitat Conservation Plan (Final). U.S. Fish and Wildlife Service. 2017. Accessed online at: https://ecos.fws.gov/docs/plan_documents/neas/neas_1667.pdf

Barber et al. 2009 – Barber, J. R., Fristrup, K. R., Brown, C. L., Hardy, A. R., Angeloni, L. M., & Crooks, K. R. Conserving the wildlife therein—Protecting park fauna from anthropogenic noise. Park Science, 26(3). December 30, 2009. Accessed online at: https://sites.warnercnr.colostate.edu/soundandlightecologyteam/wp-content/uploads/sites/146/2020/11/parkscience2009.pdf

Bateman et al. 2023 – Bateman, B. L., Moody, G., Fuller, J., Taylor, L., Seavy, N., Grand, J., Belak, J., George, G., Wilsey, C., & Rose, S. Birds and transmission report: Building the grid birds need. National Audubon Society. 2023. Accessed online at: https://media.audubon.org/2023-08/BirdsAndTransmissionReport.pdf

BCI 2026 – Western Red Bat (*Lasiurus blossevillii*) [Species account]. Bat Conservation International. Accessed online at: https://www.batcon.org/bat/lasiurus-blosse villii/

Bernardino et al. 2018 – Bernardino, J., Bevanger, K., Barrientos, R., Dwyer, J. F., Marques, A. T., Martins, R. C., Shaw, J. M., Silva, J. P., & Moreira, F. Bird collisions with power lines: State of the art and priority areas for research. Biological Conservation, 222, 1-13. March 30, 2018. https://doi.org/10.1016/j.biocon. 2018.02.029

Brown and Drewien 1993 – Brown, W. M., and Drewien, R. C. Marking power lines to reduce avian collision mortality in the San Luis Valley, Colorado. Proceedings of the Sixth North American Crane Workshop (177). North American Crane Working Group. 1992. Accessed online at: https://digitalcommons.unl.edu/nacwgproc/249

Buehler 2000 – Buehler, D. A. Bald Eagle (Haliaeetus leucocephalus). The Birds of North America (No. 506). Cornell Lab of Ornithology and The Academy of Natural Sciences. January 1, 2000. Accessed online at: https://birdsoftheworld.org/bow/ historic/bna/baleag/2.0/introduction

Bury 1970 – Bury, R. B. *Clemmys marmorata*. Catalogue of American Amphibians and Reptiles: 100.1-100.3. 1970. Accessed online at: https://dn790000.ca.archive. org/0/items/catalogue-american-amphibians-and-reptiles-100-001-003/catalogue-american-amphibians-and-reptiles-100-001-003.pdf

Bury 1972 – Bury, R. B. Habits and home range of the Pacific pond turtle, *Clemmys marmorata*, in a stream community. Unpublished Ph.D. dissertation, University of California, Berkeley. 1972. Accessed online at: https://www.pondturtle.com/ turtles/Turtle%20Papers/BuryBruce1972Dissertation.pdf

CalFlora 2026 – Calflora Observation Search. Calflora. Accessed on January 15, 2026. Accessed online at: https://www.calflora.org/search.html

Cal-IPC 2026 – California Invasive Plant Inventory Database. California Invasive Plant Council. Accessed online at: https://www.cal-ipc.org/plants/inventory/

CCED 2026 – California Conservation Easement Database. Greeninfo Network. Accessed online at: https://data.cnra.ca.gov/dataset/california-conservation-easement-database

CDFG 2012 – Department of Fish and Game. Staff Report on Burrowing Owl Mitigation. State of California Natural Resources Agency. March 7, 2012. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=83843&inline=true

CDFW 2016 – Status Review: Swainson's Hawk (*Buteo swainsoni*) in California. California Department of Fish and Wildlife. Five Year Status Report. April 11,

2016. Accessed Online at: https://nrm.dfg.ca.gov/FileHandler.ashx?Document ID=133622&inline

CDFW 2018 - Department of Fish and Wildlife. The Protocol for Surveying and Evaluating Impacts to Special-Status Native Plant Populations and Sensitive Natural Communities. California Natural Resources Agency. March 20, 2018. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID =18959&inline

CDFW 2023 – Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species. California Department of Fish and Wildlife. June 6, 2023. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID =213150&inline

CDFW 2025a – California Natural Diversity Database (CNDDB) Special Animals List. California Department of Fish and Wildlife. Accessed on: January 15, 2026. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID =109406&inline

CDFW 2025b – California Natural Community List. California Department of Fish and Wildlife. February 27, 2025. Accessed online at: https://nrm.dfg.ca.gov/File Handler.ashx?DocumentID=153398&inline

CDFW 2026a – California Natural Diversity Database, Rarefind Version 5 [Online application]. California Department of Fish and Wildlife. Accessed on: January 15, 2026. Accessed online at: https://apps.wildlife.ca.gov/rarefind/view/RareFind .aspx

CDFW 2026b – Terrestrial Connectivity, Areas of Conservation Emphasis (ACE) [Online application]. California Department of Fish and Wildlife. Accessed online at: https://apps.wildlife.ca.gov/ace/

CDFW 2026c – California Wildlife Habitat Relationships Maps and Data [Online application]. California Department of Fish and Wildlife. Accessed online at: https://apps.wildlife.ca.gov/cwhr/index.shtml

CDFW 2026d – Vegetation Classification Maps and Data. California Department of Fish and Wildlife. Accessed online at: https://wildlife.ca.gov/Data/VegCAMP/Reports-and-Maps

Chung-MacCoubrey 1996 – Chung-MacCoubrey, A. L. Grassland bats and land management in the Southwest. In Ecosystem disturbance and wildlife conservation in western grasslands: A symposium proceedings (pp. 54-63). 1996. Accessed online at: https://www.fs.usda.gov/rm/pubs_rm/ rm_gtr285/rm_gtr285_054_063.pdf

Claassen et al. 2024 – Claassen, M., Bingham, B., Chow, J. C., Watson, J. G., Wang, Y., & Wang, X. Characterization of lithium-ion battery fire emissions—Part 1: Chemical composition of fine particles (PM2.5). Batteries, 10(9), 301. 2024. Accessed online at: https://doi.org/10.3390/batteries10090301

CNDDB 2026 – California Natural Diversity Database. Special Animals List. California Department of Fish and Wildlife. 2026. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inlineCNPS

2001– CNPS Botanical Survey Guidelines. California Native Plant Society. December 9, 1983; Revised June 2, 2001. Accessed online at: https://cnps.org/wp-content/uploads/2018/03/cnps_survey_guidelines.pdf

CNPS 2026a – A Manual of California Vegetation Online. California Native Plant Society. Accessed online at: https://vegetation.cnps.org/

CNPS 2026b – CNPS Rare Plant Inventory. California Native Plant Society. Accessed online at: https://rareplants.cnps.org/Search/Advanced

CPAD 2026 – California Protected Areas Database. Greeninfo Network. Accessed online at: https://data.cnra.ca.gov/dataset/california-protected-areas-database

D'Amico et al. 2019 – D'Amico, M., Martins, R. C., Porto, M., Álvarez-Martínez, J. M., & Barrientos, R. Bird collisions with power lines: Prioritizing species and areas by estimating potential population-level impacts. Diversity and Distributions, 25(6), 975–982. February 12, 2019. Accessed online at: https://doi.org/10.1111/ddi.12903

Dobkin et al. 2008 – Dobkin, D., Granholm, S., Mewaldt, L., & Duke, R. Grasshopper Sparrow. California Department of Fish and Wildlife, California Wildlife Habitat Relationships System. 2008. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=2163

DWR 2025 – Water Management Boundary Tool. California Department of Water Resources. Accessed on: December 8, 2025. Accessed online at: https://gis.water.ca.gov/app/boundaries/

eBird 2026 – eBird: An Online Database of Bird Distribution and Abundance. Accessed online at: https://ebird.org/map/swahaw?neg=true&env.minX=-121.58829819580079&env.minY=37.707138706082&env.maxX=-121.57937180419923&env.maxY=37.71059327821441&zh=true&gp=false&ev=Z&excludeExX=false&excludeExAll=false&mr=1-12&bmo=1&emo=12&yr=all&byr=1900&eyr=2025

Ernst and Barbour 1972 – Ernst, C. H., and R. W. Barbour. 1972. Turtles in the United States. The University Press of Kentucky, Lexington, Kentucky.

Feldman 1982 – Feldman, M. 1982. Notes on reproduction in *Clemmys marmorata*. Herpetological Review.

Gervais et al. 2008 – Gervais, J. A., D. K. Rosenberg, and L. A. Comrack. 2008. Burrowing owl (*Athene cunicularia*). Studies of Western Birds No. 1, 218-226. 2008. Accessed online at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=10405&inline

Goodrich and Smith 2008 – Goodrich, L.J. and Smith, J.P. Raptor Migration in North America. The state of North America's birds of prey. Nuttall Ornithological Club

and American Ornithologists Union. 2008. Accessed online at: https://hawkwatch.org/wp-content/uploads/2023/08/2008-SNABP_Chp2_migration_geography.pdf

Google Earth 2025 – Google Earth 10.95.1.3 [Online software]. Accessed online at: https://earth.google.com/web/

Grinnell and Miller 1944 – The distribution of the birds of California. Pacific Coast Avifauna No. 27. Berkeley, CA: Cooper Ornithological Club. 1944.

Habib et al. 2007 – Habib, L., Bayne, E. M., & Boutin, S. Chronic industrial noise affects pairing success and age structure of ovenbirds (*Seiurus aurocapilla*). Journal of Applied Ecology, 44(1), 176–184. February 2007. Accessed online at: https://doi.org/10.1111/j.1365-2664.2006.01234.x

Harris 1990 – Harris, J. Hoary Bat. California Department of Fish and Wildlife, California Wildlife Habitat Relationships Systems. Hoary Bat. 1990.

Hatfield et al. 2015 – Hatfield, R., Jepsen, S., Thorp, R., Richardson, L. & Colla, S. 2015. Bombus crotchii, The IUCN Red List of Threatened Species 2015. Accessed online at: https://dx.doi.org/10.2305/IUCN.UK.2015-2.RLTS.T44937582A46440211.en

Hatfield et al. 2018 – Hatfield, R., Jepsen, S., Mader, E., Hoffman Black, S., & Shepherd, M. Conserving bumble bees: Guidelines for creating and managing habitat for America's declining pollinators (Version 01, Serial No. 12-028). The Xerces Society for Invertebrate Conservation. 2018. Accessed online at: https://xerces.org/sites/default/files/2018-05/12-028_01_XercesSoc_Conserving-Bumble-Bees-Guidelines_web.pdf

Hunt 2002 – Hunt, W. G. Golden Eagles in a Perilous Landscape: Predicting the Effects of Mitigation for Wind Turbine Blade-Strike Mortality. California Energy Commission, PIER Program Report P500-02-043F. 2002. Accessed online at: https://cdn.birdlife.se/wp-content/uploads/2019/01/PIER_Golden-Eagle-mortality_Altamont_California.pdf

Hunt et al. 2017 – Hunt, W. G., Law, P., Fuller, M. Hunt, T. Driscoll, D. Jackman, R. 2017. Quantifying the demographic Cost of Human-Related Mortality to a Raptor Population. Accessed online at: https://pubs.usgs.gov/publication/70186880

iNaturalist 2026 – iNaturalist [Online software]. Accessed online at: https://www.inaturalist.org/observations

Jennings and Hayes 1994 – Jennings, M. R. and Hayes, M. P. Amphibian and reptile species of special concern in California. California Department of Fish and Game. 1994.

Kleist et al. 2018 – Kleist, N. J., Guralnick, R. P., Cruz, A., Lowry, C. A., & Francis, C. D. Chronic anthropogenic noise disrupts glucocorticoid signaling and has multiple effects on fitness in an avian community. Proceedings of the National Academy

of Sciences, 115(4), E648–E657. January 8, 2018. Accessed online at: https://doi.org/10.1073/pnas.1709200115

Kochert et al. 2020 - Katzner, T. E., Kochert, M. N., Steenhof, K., McIntyre, C. L., Craig, E. H., & Miller, T. A. Golden *Eagle (Aquila chrysaetos)*, version 2.0. In *Birds of the World*. 2020. Accessed online at: https://doi.org/10.2173/bow.goleag.01

Luzenski et al. 2016 – Luzenski, J., Rocca, C. E., Harness, R. E., Cummings, J. L., Austin, D. D., Landon, M. A., & Dwyer, J. F. Collision avoidance by migrating raptors encountering a new electric power transmission line. The Condor, 118(2), 402-410. April 21, 2016. Accessed online at: https://www.jstor.org/stable/90009326

McIntyre et al. 2008 - McIntyre, C.L., D.C. Douglas, & M.W. Collopy. Movements of Golden Eagles (*Aquila chrysaetos*) from Interior Alaska During Their First Year of Independence. The Auk. January 1, 2008. Accessed online at: https://doi.org/10.1525/auk.2008.125.1.214

NatureServe 2026 – NatureServe Explorer Pro. Accessed on: January 15, 2026. Accessed online at: https://explorer.natureserve.org/

Nussbaum et al. 1983 – Nussbaum, R.A., Brodie, E.D., Jr., and Storm, R. M. Amphibians and Reptiles of the Pacific Northwest. 1983. University of Idaho Press, Moscow, Idaho.

Pagel et al. 2010 – Pagel, J. E., Whittington, D. M., Allen, & George T. Interim Golden Eagle Inventory and Monitoring Protocols; and Other Recommendations. United States Fish and Wildlife Service. February 2010. Accessed online at: https://tethys.pnnl.gov/sites/default/files/publications/Pagel-2010.pdf

Peeters and Peeters 2005 – Peeters, H. J. and Peeters, P. Western North American Naturalist – Raptors of California. University of California Press, Berkeley and Los Angeles, California. February 2005.

Penrod et al. 2001 – Penrod, K., Hunter, R., & Merrifield, M. Missing Linkages: Restoring Connectivity to the California Landscape. California Wilderness Coalition; The Nature Conservancy; U.S. Geological Survey; Center for Reproduction of Endangered Species; California State Parks. 2001. Accessed online at: http://www.scwildlands.org/reports/Missing_Linkages.pdf

Penrod et al. 2013 – Penrod, K., Garding, P. E., Paulman, C., Beier, P., Weiss, S., Schaefer, N., Branciforte, R., & Gaffney, K. Critical Linkages: Bay Area & Beyond. Science & Collaboration for Connected Wildlands; Bay Area Open Space Council's Conservation Lands Network. 2013. Accessed online at: http://www.scwildlands.org/reports/CriticalLinkages_BayAreaAndBeyond.pdf

PG&E 2017a – PG&E Construction Stormwater Group. A-ESCP: Stockpile management. Pacific Gas and Electric Company. March 2017.

PG&E 2017b – PG&E Construction Stormwater Group. A-ESCP: Pole replacement (rural, agricultural, and urban settings). Pacific Gas and Electric Company. April 2017

PG&E 2017c – PG&E Construction Stormwater Group. A-ESCP: Good housekeeping. Pacific Gas and Electric Company. April 2017.

Pierson et al. 2006 – Pierson, E.D., Rainey, W. E., and Corben, C. Distribution and status of Western red bats (*Lasiurus blossevillii*) in California. California Department of Fish and Game, Habitat Conservation Planning Branch, Species Conservation and Recovery Program Report 2006-04. 2006.

Sawyer et al. 2009 – Sawyer, J. O., Keeler-Wolf, T., & Evens, J. M. A Manual of California Vegetation. 2009. Accessed online at: https://vegetation.cnps.org/

SHTAC 2000 – Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley. Swainson's Hawk Technical Advisory Committee. May 31, 2000.

Solano County 2008 – Solano County. Solano County general plan: Planning for a sustainable Solano County. November 2008. Accessed online at: https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

Solano County 2026 – Solano County Department of Information Technology. Solano County Planning Viewer—Public [Web application]. Accessed on: January 23, 2026. Accessed online at: https://solanocountygis.com/portal/apps/webappviewer/index.html?id=d4090bcafe06473daa4db536cffac1cc

Spencer et al. 2010 – Spencer, W.D., P. Beier, K. Pendrod, K. Winters, C. Paulman, H. Rustigian-Romsos, J. Strittholt, M. Parisi, and A. Pettler. 2010. California Essential Habitat Connectivity Project: A Strategy for Conserving a Connected California. Accessed online at: https://consbio.org/reports/california-essential-habitat-connectivity-project-a-strategy-for-conservation-a-connected-california/

Stebbins 1972 – Stebbins, R. C. *California amphibians and reptiles*. University of California Press, Berkeley. 1972.

Storer 1930 – Storer, T.I. 1930. Notes on the range and life-history of the Pacific fresh-water turtle, *Clemmys marmorata*. University of California Publications in Zoology. Accessed online at: https://www.pondturtle.com/turtles/Turtle%20Papers/StorerTracy1930RangeLifeHistoryPacificFreshWaterTurtleClemmysMarmorata.pdf

TEEX 2024 – Texas A&M Engineering Extension Service (TEEX). Lithium-ion battery fires and emissions characterization report. Southwest Research Institute. November 2024. Accessed online at: https://teex.org/wp-content/uploads/LITHIUM-ION-BATTERY-FIRES-AND-EMISSIONS-CHARACTERIZATION.pdf

TT 2024a – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024b – Tetra Tech (TN 259894). Volume 2 App 4-4 Biological Resources Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025b – Tetra Tech (TN 262555). Data Request Response #1. Docketed April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025j – Tetra Tech (TN 263990). Biological resources Report - Redline. Dated June 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026a – Tetra Tech (TN 268258). Project Description Update #2, Part 1. Docketed January 16, 2026. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=268258&DocumentContentId=105429

Unitt 2004 – Unitt, P. San Diego County Bird Atlas. San Diego Society of Natural History. San Diego Natural History Museum. 2004.

USACE 1987 – U.S. Army Corps of Engineers Waterways Experiment Station. Corps of Engineers Wetlands Delineation Manual (Technical Report Y-87-1). 1987. Accessed online at: https://www.sac.usace.army.mil/Portals/43/docs/regulatory/1987_wetland_delineation_manual_reg.pdf

USACE 2008 – U.S. Army Corps of Engineers Research and Development Center. Regional supplement to the Corps of Engineers wetland delineation manual: Arid West region (Version 2.0). 2008. Accessed online at: https://usace.contentdm.oclc.org/utils/getfile/collection/p266001coll1/id/7627

USDA 2026a – US Department of Agriculture (USDA) Web Soil Survey [Web application]. Natural Resources Conservation Service. Accessed online at: https://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

USDA 2026b – U.S. Department of Agriculture Soil Data Access (SDA) Hydric Soils List. Natural Resources Conservation Service. Accessed online at: https://www.nrcs.usda.gov/publications/query-by-ssa.html

USFWS 2000 - Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed, and Candidate Plants. January 2000. Accessed online at: https://cnps.org/wp-content/uploads/2019/10/Bot-Cert_US-Fish-and-Wildlife-Service-guidelines-botanical-inventories-LR.pdf

USFWS 2016 - Eagle Conservation Plan Guidance: Module 1 – Land-based Wind Energy, Version 2. U.S. Fish and Wildlife Service. Washington, D.C.

USFWS 2026a – IPac Resource List [Report]. U.S. Fish and Wildlife Service. Accessed on January 15, 2026. Accessed online at: https://ipac.ecosphere.fws.gov/location/index

USFWS 2026b – National Wetlands Inventory Mapper. Accessed on January 19, 2026. Accessed online at: https://fwsprimary.wim.usgs.gov/wetlands/apps/wetlands-mapper/

Vickery 1996 – Vickery, P.D. Grasshopper Sparrow (*Ammodramus savannarum*). The Birds of North America Online, Cornell Lab of Ornithology, Ithaca. 1996. Accessed online at: https://doi.org/10.2173/bow.graspa.01

Williams et al. 2014 – Williams, P.H., Thorp, R.W., Richardson, L.L., and Colla, S.R. Bumble bees of North America: an Identification Guide. Princeton University Press. March 30, 2014.

WRCC 2025 – Western Regional Climate Center (WRCC). Western U.S. climate summaries and historical climate data. Desert Research Institute. Accessed on: January 15, 2026. Accessed online at: https://wrcc.dri.edu/Climate/

Xerces 2016 – State of the Monarch Butterfly Overwintering Sites in California. Report prepared for the U.S. Fish and Wildlife Service. Portland, Oregon: Xerces Society for Invertebrate Conservation. June 2016.

Zeiner et al. 1990 – Zeiner, D.C., Laudenslayer, W. F. Jr., Mayer, K. E., & White, M. (Eds.). California's Wildlife, Volume II: Birds. California Statewide Wildlife Habitat Relationships System, California Department of Fish and Game. 1990.

5.3 Climate Change and Greenhouse Gas Emissions

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to climate change and greenhouse gas (GHG) emissions. Unlike emissions of criteria and toxic air pollutants, which have regional and localized impacts, GHG emissions relate to the broader impact of global climate change. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.3.1 Environmental Setting

Existing Conditions

Physical Setting and Effects of GHG Emissions. The global climate depends on the presence of naturally occurring GHG to provide what is commonly known as the "greenhouse effect" that allows heat radiated from the Earth's surface to warm the atmosphere. The greenhouse effect is driven mainly by water vapor, aerosols, carbon dioxide (CO_2), methane (CH_4), nitrous oxide (N_2O), and other constituents. Globally, the presence of GHG affects temperatures, precipitation, sea levels, ocean currents, wind patterns, and storm activity.

Human activity directly contributes to emissions of six primary anthropogenic GHGs: CO_2, CH_4, N_2O, fluorinated gases (F-gases) (hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]). The standard definition of anthropogenic GHG includes these six substances under the 1997 Kyoto Protocol (UNFCCC 1998). The most important and widely occurring anthropogenic GHG is CO_2, primarily from the use of fossil fuels as a source of energy.

Each GHG has its own potency and effect upon the Earth's energy balance, expressed in terms of a global warming potential (GWP), with CO_2 being assigned a value of one (1.0). Specifically, the GWP is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given time relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms the Earth compared to CO_2 over that time. The time usually used for GWPs is 100 years. The F-gases are sometimes called high-GWP gases because, for a given amount of mass, they trap substantially more heat than CO_2. The GWPs for these gases can be in the thousands or tens of thousands. The carbon dioxide equivalent (CO_2e) mass emission rate for a source is obtained by multiplying the mass of each GHG by the assigned GWP for that compound and then adding the results of this product together to obtain a single, mass emission rate in terms of CO_2e that represents the combined effects of the GHGs.

Changing temperatures, precipitation, sea levels, ocean currents, wind patterns and storm activity provide indicators and evidence of the effects of climate change. For the

period 1950 onward, relatively comprehensive data sets of observations are available. Research by California's Office of Environmental Health Hazard Assessment (OEHHA) reports certain climate change indicators by categorizing the effects as: changes in California's climate; impacts to physical systems including oceans, lakes, rivers, and snowpack; and impacts to biological systems including humans, vegetation, and wildlife. The primary observed changes in California's climate include increased annual average air temperatures, more-frequent extremely hot days and nights, and increased severity of drought. Impacts to physical systems affected by warming temperatures and changing precipitation patterns show decreasing snowmelt runoff, shrinking glaciers, and rising sea levels. Impacts to terrestrial, marine, and freshwater biological systems, with resulting changes in habitat, agriculture, and food supply are occurring in conjunction with the potential to impact human well-being (OEHHA 2022).

California Emissions Inventory. California is a contributor to global GHG emissions. The total gross California GHG emissions in 2022 were 371.1 million metric tons of CO_2-equivalent ($MMTCO_2e$) (CARB 2024). The largest category of GHG emissions in California is transportation, followed by industrial activities and electricity generation in state and out of state.

In 2022, the total gross U.S. GHG emissions were 6,343 $MMTCO_2e$, or 5,489 $MMTCO_2e$ after accounting for sequestration from the land sector (U.S. EPA 2024). Nationwide GHG emissions in 2022 rebounded from 2020 levels that were lower than 2019 because of a sharp decline due to the impacts of the coronavirus (COVID-19) pandemic on fossil fuel combustion, related to travel and economic activity (CARB 2024, U.S. EPA 2024).

Solano County Emissions Inventory. In 2005, approximately 960,700 metric tons of carbon dioxide equivalent ($MTCO_2e$) emissions were generated within the unincorporated County. Transportation-related activities contributed approximately 51% of the communitywide annual GHG emissions. Electricity and natural gas consumption contributed 22% of the emissions. GHG emissions associated with industrial processes generated more than half of these energy-related emissions. Commercial energy use generated approximately one third and residential energy use generated the remaining 12% of energy-related emissions. Agriculture, including livestock, field equipment, soil management, pesticides, and crop residue burning emissions made up approximately 21% of the inventory. The water sector contributed approximately 4% and the waste sector accounted for approximately 2% (Solano County 2011).

City of Vacaville Emissions Inventory. Vacaville's baseline GHG inventory was compiled for the year 2008. Vacaville's average annual communitywide GHG emissions in 2008 were 949,340 $MTCO_2e$. The largest portion of emissions in the 2008 inventory came from the transportation sector, which was 63 percent of the City's total GHG emissions. Commercial and residential energy (both electricity and natural gas) uses were the second largest contributor of GHG emissions with 33 percent of total emissions. Solid waste disposal accounted for 2 percent and Water and Wastewater accounted for 1 percent of total GHG emissions in 2008. Other Off-Road Equipment accounted for approximately 1 percent of total GHG emissions (Vacaville 2015).

Decarbonization of California's Electricity Sector

The electricity sector in California has achieved substantial GHG emissions reductions through renewable and zero-carbon energy deployment. Moving forward, a clean, affordable, and reliable electricity grid will serve as a backbone to support deep decarbonization across California's economy. Decarbonizing the electricity sector is a crucial pillar of achieving carbon neutrality, and CARB anticipates that the role of electricity in powering the economy will continue to grow while electric loads increase (CARB 2022).

California continues to add zero-carbon energy resources to replace fossil-fuel generation and support growing demand. Moving to zero-carbon resources is critical to reducing GHG emissions and addressing the long-term impacts of climate change (CEC 2022). Renewable and zero-carbon sources of energy do not operate on-demand like traditional fossil fuel power plants. The growth of zero-carbon resources, especially solar resources, has shifted the reliability concerns from the peak hour (hour with the highest energy demand) to net peak hours (hours when energy demand minus wind and solar generation is largest). As solar capacity has grown in recent years, net peak has shifted to later in the day. Wind generation late in the day aids in meeting the shift to a later net peak (CEC 2022).

Peak demand times require dispatching generation plants with different fuels, and generation resources in the state are diverse. Wind and solar generation are part of the supply on most days. While the electricity sector is using less fossil fuel due to increasing amounts of renewables, existing fossil-fuel natural gas-fired generation will continue to play a critical role in grid reliability until other clean, dispatchable alternatives can be deployed at scale. Presently, fossil-fuel natural gas-fired power plants provide about 75 percent of the flexible capacity for grid reliability. As more renewable power enters the system, other resources such as storage and demand-side management are essential to maintain reliability with high concentrations of renewables (CARB 2022).

Regulatory

Federal

There are no federal laws, ordinances, regulations, and standards (LORS) related to GHGs that would apply to the project.

State

California Global Warming Solutions Act of 2006. In 2006, the state Legislature passed the California Global Warming Solutions Act of 2006 (Assembly Bill 32, Núñez, Chapter 488, Statutes of 2006), codified as Health and Safety Code, section 38500 and the following, which provided the initial framework for regulating GHG emissions in California. This law required CARB to design and implement GHG emissions limits, regulations, and other measures such that statewide GHG emissions are reduced in a

technologically feasible and cost-effective manner to 1990 levels by 2020. AB 32 also required CARB to implement a mandatory GHG emissions reporting program for major sources, which includes electricity generators, industrial facilities, fuel suppliers, and electricity importers.

CARB Scoping Plan. Part of the Legislature's direction to CARB under AB 32 was to develop a scoping plan that serves as a statewide planning document to coordinate the main strategies California will use to reduce GHG emissions that cause climate change. CARB approved the AB 32 Climate Change Scoping Plan (Scoping Plan) in 2008 and released updates in 2014, 2017, and 2022. The CARB's Scoping Plan includes a range of GHG emissions reduction actions, which include direct regulations, alternative compliance mechanisms, monetary and non-monetary incentives, voluntary actions, and market-based compliance mechanisms, such as the cap-and-trade program. In December 2007, CARB set the statewide 2020 emissions limit, defined as reducing emissions to 1990 levels, at 427 $MMTCO_2e$. The 2014 Scoping Plan adjusted the 1990 emissions estimate and the statewide 2020 emissions limit goal to 431 $MMTCO_2e$ (CARB 2014). The 2017 Scoping Plan (CARB 2017a) demonstrates the approach necessary to achieve California's 2030 target, which is to reduce GHG emissions 40 percent below 1990 levels to 260 $MMTCO_2e$. On November 16, 2022, CARB published the 2022 Scoping Plan for Achieving Carbon Neutrality (CARB 2022), which lays out a path to achieve targets for carbon neutrality by 2045.

Executive Order B-30-15. On April 29, 2015, former Governor Brown issued Executive Order B-30-15, directing state agencies to implement measures to reduce GHG emissions 40 percent below their 1990 levels by 2030 and to make it possible to achieve the previously stated goal of an 80 percent GHG emissions reduction below 1990 GHG emissions by 2050 (CARB 2017a).

Statewide 2030 GHG Emissions Limit. On September 8, 2016, SB 32, codified as Health and Safety Code, section 38566, extended California's commitment to reduce GHG emissions by requiring the state to reduce statewide GHG emissions by 40 percent below 1990 levels by 2030 (CARB 2017a).

Renewable Energy Programs. In 2002, California initially established the Renewables Portfolio Standard (RPS) with the goal of increasing the percentage of renewable energy in the state's electricity mix to 20 percent by 2017. State energy agencies recommended accelerating that goal, and former Governor Schwarzenegger's Executive Order S-14-08 (November 2008) required California utilities to reach the 33 percent renewable electricity goal by 2020, consistent with the CARB's 2008 Scoping Plan. In April 2011, Senate Bill X1-2 (Simitian, Chapter 1, Statutes of 2011) of the First Extraordinary Session was signed into law. SB X1-2 expressly applied the 33 percent RPS by December 31, 2020, to all retail sellers of electricity and established renewable energy standards for interim years prior to 2020.

- Clean Energy and Pollution Reduction Act (Senate Bill 350, De León, Chapter 547, Statutes of 2015): Beginning in 2016, SB 350 took effect declaring it the intent of

the Legislature to acknowledge Governor Brown's clean energy, clean air and GHG emissions reduction goals for 2030 and beyond. SB 350 increases California's renewable electricity procurement goal from 33 percent by 2020 to 50 percent by 2030.

- The 100 Percent Clean Energy Act of 2018 (Senate Bill 100, De León, Chapter 312, Statutes of 2018): Beginning in 2019, the RPS deadlines advanced to 50 percent renewable resources by December 31, 2026, and 60 percent by December 31, 2030. In addition, SB 100 establishes policy that renewable energy resources and zero-carbon resources supply 100 percent of all retail sales of electricity by December 31, 2045.
- Clean Energy, Jobs, and Affordability Act of 2022 (Senate Bill 1020, Laird, Chapter 361, Statutes of 2022): Accelerates the timelines set forth in SB 100 to provide that eligible renewable energy resources and zero-carbon resources supply 90 percent of all retail sales of electricity to California end-use customers by December 31, 2035, 95 percent of all retail sales of electricity to California end-use customers by December 31, 2040, 100 percent of all retail sales of electricity to California end-use customers by December 31, 2045, and 100 percent of electricity procured to serve all state agencies by December 31, 2035, as specified.

Short-Lived Climate Pollutant Strategy. To best support the reduction of GHG emissions consistent with AB 32, CARB released the Short-Lived Climate Pollutant (SLCP) Strategy, under Health and Safety Code, section 39730, in March 2017. Health and Safety Code, section 39730, defined SLCPs as having lifetimes in the atmosphere ranging from "a few days to a few decades." Then beginning in 2017 under Health and Safety Code, section 39730.5, CARB was directed to set targets to reduce SLCP emissions 40 percent below 2013 levels by 2030 for CH_4 and HFCs and 50 percent below 2013 levels by 2030 for anthropogenic black carbon (CARB 2017b). The SLCP Strategy was integrated into the 2017 update to CARB's Scoping Plan.

To help meet the HFC reduction goal, California adopted Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5, Sections 95371, et seq.). The prohibited HFCs and their respective effective dates are listed in the regulation. In addition, on September 30, 2022, the Governor approved SB 1206, which would prohibit a person from offering for sale or distribution, or otherwise entering into commerce in the state, bulk HFCs or bulk blends containing HFCs that exceed the GWP limit of 2,200 beginning January 1, 2025, and lower GWP limits beginning January 1, 2030, and January 1, 2033. The bill does not restrict the authority of CARB to establish regulations lowering the maximum allowable GWP limits below the limits established by the bill.

Senate Bill SB 375. The Sustainable Communities and Climate Protection Act of 2008 (SB 375), signed in August 2008, enhances the state's ability to reach AB 32 goals by directing CARB to develop regional GHG emission reduction targets to be achieved from passenger vehicles by 2020 and 2035. SB 375 aligns regional transportation planning

efforts, regional GHG reduction targets, and affordable housing allocations. Metropolitan Planning Organizations (MPO) are required to adopt a Sustainable Communities Strategy (SCS), which allocates land uses in the MPO's Regional Transportation Plan (RTP). Qualified projects consistent with an approved SCS or Alternative Planning Strategy (categorized as "transit priority projects") can receive incentives to streamline CEQA processing.

On March 22, 2018, CARB adopted updated regional targets for reducing GHG emissions from 2005 levels by 2020 and 2035. The Metropolitan Transportation Commission and Association of Bay Area Governments (MTC & ABAG) are jointly responsible for developing and adopting an SCS that integrates transportation, land use, and housing and were assigned targets of a 10 percent reduction in per capita GHG emissions from passenger vehicles by 2020 and a 19 percent reduction in per capita GHG emissions from passenger vehicles by 2035 (CARB 2018). MTC & ABAG is the regional planning agency for Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties and develops long-range regional transportation plans, including a sustainable communities strategy and a growth forecast, regional transportation improvement programs, regional housing needs allocations, and economic development. MTC & ABAG most recently prepared the 2021 Regional Transportation Plan/Sustainable Communities Strategy (Plan Bay Area 2050) for the region which aligns with a portion of the Bay Area Air District's (BAAD) Clean Air Plan (BAAD 2017b). Plan Bay Area 2050 quantifies a 20 percent reduction by 2035 (MTC & ABAG 2021).

In 2022, CARB accepted MTC & ABAG's quantification of GHG reductions and its determination the SCS, if implemented, would achieve CARB's targets. Project consistency with the 2021 RTP/SCS would therefore support AB 32 and SB 32 GHG reduction goals. An updated 2025 RTP/SCS, Plan Bay Area 2050+, (MTC & ABAG 2025) is being developed by MTC & ABAG. Plan Bay Area 2050+ will evaluate the Plan Bay Area 2050 strategies through a post-COVID pandemic lens.

Executive Order B-55-18. On September 10, 2018, the same day he signed SB 100 into law, former Governor Brown issued Executive Order B-55-18 to achieve carbon neutrality, stating the governor's intention "to achieve carbon neutrality as soon as possible, and no later than 2045, and achieve and maintain net negative emissions thereafter. This goal is in addition to the existing statewide targets of reducing GHG emissions." From the 2020 GHG limit of 431 $MMTCO_2e$, California will need to reduce statewide emissions another 170 million tons to meet its 2030 statutory target of 260 million tons per year (40 percent below 1990 levels). The state would need to cut annual emissions by a further 175 million tons to meet its 2050 goal (set by executive order) of 85 million tons per year (80 percent below 1990 levels).

Reducing SF_6 Emissions from Gas Insulated Switchgear. In early 2011, CARB adopted a regulation (Cal. Code Regs., tit. 17, §§ 95350 to 95359) to reduce SF_6 emissions in gas insulated switchgear used in the electricity sector's transmission and distribution system as an early action measure pursuant to AB 32. SF_6 is an extremely

powerful and long-lived GHG. The 100-year GWP of SF_6 is 22,800 (from IPCC Fourth Assessment Report), making it the most potent of the six main GHGs, according to the U.S. EPA. Because of its extremely high GWP, small reductions in SF_6 emissions can have a large impact on reducing GHG emissions, which are the main drivers of climate change.

The regulation requires gas insulated switchgear owners to report SF_6 emissions annually and requires reducing losses of SF_6 over time, subject to annual emission rate limits. The maximum allowable emission rate started at 10 percent in 2011 and has decreased one percent per year since then. The limit reached one percent in 2020 and remained at that level going forward. However, data show that statewide SF_6 capacity is growing by one to five percent per year, which would increase the expected SF_6 emissions. In response to emerging technologies using lower or zero GWP insulators, CARB amended the regulation (Cal. Code Regs., tit. 17, §§ 95350 to 95359.1) in 2021 to further reduce GHG emissions from gas-insulated equipment (GIE). Key provisions of the amended regulation include a phase-out schedule in stages between 2025 and 2033 for new SF_6 GIE, coverage of other GHG beyond SF_6 used in GIE, and other changes that enhance accuracy of emissions accounting and reporting.

The California Climate Crisis Act (Assembly Bill 1279). Assembly Bill 1279 (Muratsuchi, Chapter 337, Statutes of 2022) establishes the policy of the state to achieve carbon neutrality as soon as possible, but no later than 2045; to maintain net negative GHG emissions thereafter; and to ensure that by 2045 statewide anthropogenic GHG emissions are reduced by at least 85 percent below 1990 levels. The bill requires CARB to ensure that Scoping Plan updates identify and recommend measures to achieve carbon neutrality, and to identify and implement policies and strategies that enable CO_2 removal solutions and carbon capture, utilization, and storage (CCUS) technologies. The CARB 2022 Scoping Plan for Achieving Carbon Neutrality (CARB 2022) plans for the 2045 target set forth by AB 1279 and Executive Order B-55-18.

California Environmental Quality Act (CEQA) Guidelines for GHG Emissions. With the enactment of Senate Bill 97 (Dutton, Chapter 185, Statutes of 2007), the Governor's Office of Planning and Research was required by July 1, 2009, to prepare, develop, and transmit to the Natural Resources Agency guidelines for the feasible mitigation of GHG emissions or the effects of GHG emissions. Those amendments to the CEQA guidelines became effective March 18, 2010, and were subsequently updated in December 2018 to further address the analysis of GHG emissions, including the following:

- Lead agencies must analyze the GHG emissions of proposed projects. (See CEQA Guidelines, § 15064.4, subd. (a))
- The focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. (See CEQA Guidelines, § 15064.4, subd. (b))

- The impacts analysis of GHG emissions is global in nature and thus should be considered in a broader context. A project's incremental contribution may be cumulatively considerable even if it appears relatively small compared to statewide, national, or global emissions. (See CEQA Guidelines, § 15064.4, subd. (b))
- Lead agencies should consider a timeframe for the analysis that is appropriate for the project. (See CEQA Guidelines, § 15064.4, subd. (b))
- A lead agency's analysis must reasonably reflect evolving scientific knowledge and state regulatory schemes. (See CEQA Guidelines, § 15064.4, subd. (b).)
- Lead agencies may rely on an adopted statewide, regional, or local plan in evaluating a project's GHG emissions. (See CEQA Guidelines, § 15064.4, subd. (b)(3))
- Lead agencies may analyze and mitigate the significant impact of GHG emissions as part of a larger plan for the reduction of greenhouse gases. (See CEQA Guidelines, § 15183.5, sub. (a))
- A project's incremental contribution to a cumulative GHG emissions effect may be determined not to be significant and the effects of the project to not be cumulatively considerable if the project complies with the requirements of the GHG emissions reduction strategy. (See CEQA Guidelines, §§ 15064, sub. (h)(3); 15130, sub. (d); 15183, sub. (b))
- In determining the significance of a project's impacts, the lead agency may consider a project's consistency with the state's long-term climate goals or strategies, provided that substantial evidence supports the agency's analysis of how those goals or strategies address the project's incremental contribution to climate change and its conclusion that the project's incremental contribution is consistent with those plans, goals, or strategies. (See CEQA Guidelines, § 15064.4, subd. (b)(3))
- The lead agency has discretion to select the model or methodology it considers most appropriate to enable decision makers to intelligently account for the project's incremental contribution to climate change. (See CEQA Guidelines, § 15064.4, subd. (c).)

Regional

Yolo Solano Air Quality Management District (YSAQMD). YSAQMD does not provide any specific guidance for assessing the impacts of GHGs from land use projects located within its boundary.

Plan Bay Area 2050. Under the requirements of the Sustainable Communities and Climate Protection Act of 2008 (Senate Bill 375, Steinberg, Chapter 728, Statutes of 2008), all metropolitan regions in California must complete a Sustainable Communities Strategy (SCS) as part of their Regional Transportation Plan (RTP). In the Bay Area, the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) are federally recognized metropolitan planning organization (MPO), and are jointly responsible for developing and adopting an SCS that integrates

transportation, land use, and housing to meet GHG emissions reduction targets set by CARB. The Bay Area region includes Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, and Sonoma counties. MTC & ABAG developed the 2021 Regional Transportation Plan & Sustainable Communities Strategy, Plan Bay Area 2050, approved by the boards of MTC & ABAG on October 21, 2021. The 2021 RTP/SCS includes GHG emissions quantification for vehicle-miles traveled by automobiles and light-duty trucks in the region to achieve a GHG reduction target of 19 percent below 2005 per capita emissions levels by 2035 (MTC & ABAG 2021). The RTP/SCS lays out how the region will meet certain transportation-related GHG reduction targets while considering all economic segments of the population, population growth, household and employment growth, and the environment. (MTC & ABAG 2021). A draft updated RTP/SCS, Plan Bay Area 2050+ was published on March 10, 2026. Plan Bay Area 2050+ is a limited and focused update that outlines ideas for making the Bay Area more affordable, connected, and resilient. It doesn't fund projects or change local rules. Instead, it shows a possible pathway for future transportation, housing, and climate investments. The plan is a shared regional vision that can only happen through collaboration among governments, businesses, and nonprofits. It also updates the list of actions agencies can take to advance the plan's strategies (MTC & ABAG 2026).

Local

Solano County Climate Action Plan. Following the 2008 update to the General Plan, which recognized the threat of global climate change, the County adopted its Climate Action Plan (CAP). This plan recommends several measures and actions that the community can take to reduce both emissions and communitywide contributions to global climate change. The CAP includes a communitywide GHG emissions reduction target of 20 percent below 2005 baseline emission levels by 2020 (Solano County 2011). The County has not adopted an updated CAP.

Solano County General Plan. The Solano County General Plan, adopted by the Solano County Board of Supervisors on August 5, 2008, and by the voters of Solano County on November 4, 2008, is a guide for both development and conservation within the unincorporated county through 2030 (Solano County 2008). The following goals, policies, and implementation programs from Chapter 4, Resources and Chapter 5, Public Health and Safety, are applicable for the project:

- **Policy HS.P-89:** Promote greenhouse gas emission reductions by supporting carbon efficient farming methods (e.g., methane capture systems, no-till farming, crop rotation, cover cropping, residue farming); installation of renewable energy technologies; protection of grasslands, open space, and farmlands from conversion to other uses; and encouraging development of energy-efficient structures.
- **Policy HS.I-60:** Require the implementation of best management practices to reduce air pollutant emissions associated with the construction of all development and infrastructure projects.
- **Policy RS.P-52:** Ensure adequate and affordable supplies of energy to meet the energy needs of the county.

- **Policy RS.P-53:** Enable renewable energy sources to be produced from resources available in Solano County, such as solar, water, wind, and biofuels to reduce the reliance on energy resources from outside the county.
- **Policy RS.P-57:** Encourage the use of technology or siting to minimize adverse impacts from energy production facilities on the environment, including wildlife and agricultural resources.

Cumulative

The CEQA Guidelines indicate that the impact analysis for GHG emissions is global in nature, and the focus of the lead agency's analysis should be on the project's effect on climate change, rather than simply focusing on the quantity of emissions and how that quantity of emissions compares to statewide or global emissions. The discussion under the "Existing Conditions" subsection describes the broader context of global climate change and provides information on statewide and local emissions.

5.3.2 Environmental Impacts

CLIMATE CHANGE AND GREENHOUSE GAS EMISSIONS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐
b. Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, greenhouse gas emissions.

5.3.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The applicant estimated GHG emissions for construction and operation using CalEEMod (version 2022.1.1.21) and spreadsheet tools. The applicant's estimates include GHG emissions during construction from earth-moving activities, construction equipment, trucks bringing materials to and from the site, and construction crew commuting vehicles, based on the proposed project including the 14-month construction duration (or 15 months if a groundwater well is constructed). Operational emissions were estimated using CalEEMod to include area, energy, and mobile source emissions (TT 2025g).

In this analysis, CEC staff reviewed revised GHG emissions estimates for construction and operation of the proposed project using CalEEMod (version 2022.1.1.21). CEC staff also reviewed the CalEEMod provided results for direct emissions from construction and operation (including vehicle use), as well as indirect emissions, from energy use, solid waste disposal, vegetation planting and/or removal, and water use (TT 2025g). For calculation of on-road (off-site) mobile sources, CalEEMod uses the EMFAC 2021 emissions model (CAPCOA 2022).

Thresholds of Significance

The state of California has developed guidelines to address the significance of GHG impacts based on Appendix G of the CEQA Guidelines, which indicates that a project has significant air quality impact if the project:

- Generates GHG emissions, either directly or indirectly, that may have a significant impact on the environment; and
- Conflicts with an applicable plan, policy, or regulations adopted for the purpose of reducing the emissions of GHGs.

YSAQMD has not established a threshold of significance for GHGs. Solano County has adopted a CAP, but it does not identify any quantitative thresholds for significance evaluation. Therefore, the interim threshold for operational emissions of industrial projects proposed by the California Air Pollution Control Officers Association (CAPCOA) is used herein (CAPCOA 2008). This threshold is consistent with California's climate-stabilization target (identified in AB 32).

Following CAPCOA's analysis of development applications in various cities, it was determined that the threshold of 900 $MTCO_2e$ per year would achieve the objective of 90 percent capture and ensure that new development projects would keep the state of California on track to meet the goals of AB 32. The 900 $MTCO_2e$ threshold is applied to evaluate whether the project would generate GHG emissions that may have a significant impact on the environment. YSAQMD supports the use of the interim thresholds as established by the CAPCOA when adopted thresholds are not applicable. A new threshold has not been established to meet SB 32 targets beyond 2020. Additionally, based on the SCAQMD Draft Guidance Document – Interim CEQA GHG Significance Threshold, project construction emissions can be amortized by calculating total construction period emissions and dividing by the 30-year lifetime of the project (SCAQMD 2008).

5.3.2.2 Direct and Indirect Impacts

a. Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?

Construction

Less Than Significant Impact. Based on the analysis below, the combined direct and indirect effects of the GHG emissions indicate a net GHG reduction would occur primarily due to the emissions avoided by using the proposed BESS facility. The impact would be less than significant.

Jurisdictional Components

The proposed construction activities include emissions associated with vehicle engine exhaust from construction equipment and vehicles, vendor trips, construction worker commuting trips, and temporary stationary generators used during the construction phase of the project. These activities during construction would cause GHG emissions due to fuels used by the construction vehicles and equipment. Diesel and gasoline-powered construction equipment would include trucks for materials and crews, and the following types of equipment: air compressor, grader, bulldozer, front-end loader, forklift, generator set, tractor, roller, excavator, and a crane. Equipment and motor vehicles would directly emit CO_2, CH_4, and N_2O due to fuel use and combustion. During construction of the project, water would be required for common construction-related purposes, including (but not necessarily limited to) dust suppression, soil compaction, and grading. Temporary onsite water tanks and water trucks would provide water for construction needs (TT 2025g).

As shown in **Table 5.3-1**, over the 14-month of construction (or 15 months if a groundwater well is constructed), and the total construction phase GHG emissions would be approximately 3,688 $MTCO_2e$ including all equipment and vehicle use, for all on-site and off-site activity needed to install the proposed project (TT 2025g). To capture the long-term effects of the one-time, short-term construction GHG emissions, this analysis averages the construction effects over a 30-year life of the project. On this basis, the overall construction GHG emissions amortized over 30 years would be equivalent to an annualized rate of 123 $MTCO_2e$ per year. Construction emissions would be further reduced with the implementation of COC **AQ-SC5** in **Section 5.1, Air Quality**, which limits equipment idling and requires the use of zero-emission or hybrid powertrains and electric motors when feasible.

Non-Jurisdictional Components

Construction activities for the interconnection facilities and the new Corby substation, including installation of new transmission line structures and conductors, would involve ground disturbance of around 0.6 acres (TT 2026g) and would be temporary in nature and are unlikely to result in significant GHG emissions. Short-term construction would cause GHG emissions resulting from fossil-fuel combustion in the engines of

construction equipment and the vehicles carrying construction materials and workers to and from the site. Construction emissions for these components are included in the total construction emissions shown in **Table 5.3-1**.

Any interconnection facilities under PG&E's jurisdiction would comply with California Public Utilities Commission permitting requirements, relying on the CEC's CEQA review. Therefore, construction emissions from the interconnection facilities and the new Corby Bay substation, including installation of new transmission line structures and conductors, to the new Corby Bay substation would be further reduced below the acceptable levels established in the applicable air quality management plans.

Operation

Less Than Significant Impact. Based on the analysis below the combined direct and indirect effects of the GHG emissions indicate that a net GHG reduction would occur primarily due to the emissions avoided by using the proposed BESS facility.

Table 5.3-1 summarizes the different project effects of the O&M activities, and fugitive losses of SF_6; the table also includes the effects of indirect GHG emissions reductions due to the electricity discharged from the BESS project as renewable energy.

Jurisdictional Components

Refrigerant Leakage

The BESS would be equipped with air conditioning for thermal management purposes. In Data Responses Set #6 (TT 2026i), the applicant clarified the BESS ventilation, heating and cooling needs would use R-513a (as the refrigerant) and HFC-32 (coolant chiller medium) for the batteries thermal management needs. Based on input from the battery manufacturer, LG, the proposed LG Energy Solution's (LGES) JF2 DC LINK BESS units can be procured with HFC-32 as the BESS coolant and R-531a as the housing refrigerant. According to PD#2 (TT 2026e), both refrigerants would be stored onsite, and CEC staff has included both as potential leakages for the BESS units found in **Table 5.3-1**. R-513a has a GWP of 631 and HFC-32 has a GWP of 675 (AR5). The use of both HFC-32 and R-513a would align with Senate Bill 1206 (SB 1206), which phases out high-GWP refrigerants. The use of both HFC-32 and R-513a would also comply with regulation *Prohibitions on Use of Certain Hydrofluorocarbons (HFCs) in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses* (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5).

The project, at full build out is expected to have total of 341 enclosures; Total buildout is expected to contain 341 kilograms (kg) of HFC-32 and 157 kg of R-513a refrigerant. Based on a conservative annual leak rate assumption of 2 percent, for both R-513a and HFC-32, GHG emissions from refrigerant leakage can be represented by the following equation: CO_2e Emissions = refrigerant/coolant contained in equipment (kg) x 2% leak rate per year x 0.001 MT/kg x GWP and are shown in **Table 5.3-1**.

CEC staff has determined the project would comply with the current HFCs prohibition, and the air-cooling units installed onsite would use allowed refrigerants for cooling and ventilation needs of the BESS units.

TABLE 5.3-1 PROJECT GHG EMISSIONS FOR CONSTRUCTION AND OPERATION

Emission Source	**Annual Emissions (MTCO2e/year)**
Operational Emissions (Mobile and Area)	3.49
BESS (~341 units) – Battery Ventilation System (R-513a)	1.98[a]
BESS Thermal Runaway/Fire Emissions	1.7 to 2.5[b]
BESS (~341 units) – Battery Cooling (HFC-32)	4.6[a]
SF_6 – circuit breakers at the On-site Substation	25.86[c]
SF_6 – circuit breakers at the Off-site Substation	9.6[c]
Total Operation	**48.0[b]**
Construction Emissions (including Off-site)	3,688 (duration of construction for 14-months)
One-time Construction, if amortized over 30-year project life	123
Combined Effects Of Operation and Construction	**171**
Indirect GHG Emissions[d]	8,913
Annual Emissions Avoided by BESS[d]	-168,630 to -229,512
Total Net Emissions	**-159,546 to -220,428**

Source: Construction and O&M emissions sources from applicant activity (TT 2025g, TT 2026e, TT 2026i) and EPA Emission Factors for GHG inventories (US EPA 2024).
a CO_2e Emissions = Refrigerant/coolant contained in equipment (kg) x 2% leak rate per year x 0.001 MT/kg x GWP. R-513a has a GWP of 631 and HFC-32 has a GWP of 675.
b Based on the CO_2 emission rate of 9,153.6 lbs/hr and the 6-hour BESS fire event duration presented in **Appendix D, Dispersion and Frequency Analysis**, a BESS thermal runaway or fire event is estimated to generate approximately 25 $MTCO_2$ (= 9,153.6 lbs/hr x 6 hours x 0.0004536 MT/lb) per event. Assuming a conservative event frequency of once every 11 years —an estimate that likely overstates the actual frequency (see more details in **Appendix D, Dispersion and Frequency Analysis**)—the project could experience 2 to 3 events over its 30-year lifetime, resulting in approximately 1.7 to 2.5 $MTCO_2$ emissions per year on an amortized basis (see more details in the text). The more conservative value for the BESS Thermal Runaway/Fire Emissions of 2.5 $MTCO_2$ is included in the total operation emissions.
c The applicant conservatively estimated the GHG emissions assuming that all circuit breakers would contain SF_6. However, due to the CARB SF_6 phase-out regulation 17 CCR sections 95350 to 95359, circuit breakers in the later phases may not use SF_6 and these values are conservative. CO_2e Emissions = SF_6 gas contained in equipment (lbs) x 0.5% leak rate per year x 0.0004536 MT/lb x 22,800.
d See more details under BESS System and Indirect GHG Emissions below.

Vehicle Trips and Other O&M Activities

Proposed project operations with maintenance and inspection of the BESS facility would use diesel fuel and gasoline for off-site vehicle trips for worker commutes, material deliveries, site security, and facility upkeep. Use of these fuels would cause GHG emissions from the vehicle trips to and from the site and water use for dust suppression. Other onsite GHG emissions would be caused by landscaping, water supply, and solid waste disposal related to O&M activities. No permanent O&M staff

would be located at the project site (TT 2026g). The project would require up to six workers to support onsite and offsite O&M and administrative support functions. Onsite O&M activities would include performing routine visual inspections, executing minor repairs. and responding to needs for plant adjustment. On intermittent occasions, additional workers may be required for repairs or replacement of equipment or other specialized maintenance. However, due to the self-operating nature of the facility, such actions would likely occur infrequently. The emissions would be approximately 3.49 $MTCO_2e$ per year which are the combined mobile and area sources in **Table 5.3-1**.

Fugitive SF_6 Emissions from Gas-Insulated Equipment

During operations and maintenance, one of the main sources of GHG emissions would be fugitive emissions from equipment containing sulfur hexafluoride (SF_6) gas installed at the proposed collector substation. SF_6 has a GWP of 23,900 using CO_2 at a reference value of 1 (IPCC 2007). The proposed project would add new sources of GHG with electrical power equipment that contains gas to provide thermal insulation or arc quenching. This gas-insulated equipment includes devices such as switchgear, switches, and circuit breakers within the proposed substations. Until an alternative insulating gas becomes commercially available, circuit breakers and gas-insulated switchgear would contain SF_6, a potent GHG. The SF_6 insulating gas could be expected to leak at small amounts annually over the life of the project. Federal and state-level mandatory reporting rules track SF_6 emissions, and the CARB Regulation for Reducing Greenhouse Gas Emissions from Gas-Insulated Equipment requires control and eventual replacement and phase-out of SF_6 with alternative gases having lower GWP.

Accordingly, the project would need to manage its use of SF_6 through inventory recordkeeping, proper handling, and planning for an eventual replacement with an alternative. CARB has developed a timeline for phasing out SF_6 equipment in California and created incentives to encourage owners to replace SF_6 equipment. The California Office of Administrative Law approved this rulemaking in December 2021 and the regulation went into effect January 1, 2022 (CARB 2021). The new phase out schedule began in January 2025 with all switchgear needing to be SF_6 free by January 2033.

CARB has implemented phasing requirements for the elimination of SF_6 from electrical equipment, including circuit breakers. While the analysis assumes that all circuit breakers would contain SF_6, circuit breakers in the later phases may not contain SF_6 and/or as circuit breakers are replaced, they would be replaced with non-SF_6 technology.

The proposed substation would include four 245-kV breakers that would contain SF_6 gas. It is estimated that the project would maintain a total of 500 pounds of SF_6 gas at the substation (TT 2025e, TT 2026e). Additionally, the new Corby Bay at PG&E's Vaca-Dixon Substation would include one 230-kV circuit breaker with 186 pounds of SF_6, for a project total of 686 pounds (TT 2026i). Although leakage is unlikely, for the purposes of the project's emissions inventory, it was assumed that the breakers would have a maximum annual leak rate of 0.5% in accordance with the Institute of Electrical and

Electronics Engineers PC37.122 – Standard for High Voltage Gas-Insulated Substations Rated Above 52 kV (TT 2025e). Emissions from SF_6 gas are included as part of refrigerant source emissions.

Prior to the phase-out, emissions of SF_6 due to potential leaks are quantified as approximately 35.46 (=25.86+9.6) $MTCO_2e$ per year based on CEC staff calculations. As estimated in **Table 5.3-1** of this analysis CEC staff assumed the maximum amount of SF_6 per circuit breaker and depending on the circuit breaker used, SF_6 content may be substantially less than assumed in **Table 5.3-1**. Therefore, GHG emissions reported for the project are conservative.

BESS System and Indirect GHG Emissions

Operation of the BESS system would not directly cause or create GHG emissions while charging and discharging. The energy that the BESS system would be storing is drawn from the electricity supply during times of surplus generation. Based on years of data from the California Independent System Operator (CAISO) showing the pattern of charging and discharging of the state's utility scale battery fleet, (See Batteries Trend at https://www.caiso.com/todays-outlook/supply) the project is expected to follow the dominate pattern of charging mid-day, during excess solar renewable energy generation, when energy is the cheapest, and would be discharged during periods when energy is scarcer, more expensive, and when there would be less renewable energy generation. By storing energy at times of excess renewable generation and discharging when conventional natural gas-fired power plants would otherwise be dispatched, the BESS system would provide a combustion-free source of stored energy during times when natural gas-fired power plants would cause higher GHG emissions. The project also would improve energy grid reliability and support the integration of renewable energy sources, such as wind and solar, reducing the need to operate natural gas power plants and displacing GHG emissions.

CEC staff estimates that a natural gas-fired power plant generating an equivalent 1,200 MWh of electricity would emit approximately 462 to 629 $MTCO_2e$, based on the GHG emissions intensities of 0.385 $MTCO_2e$/MWh for a combined-cycle power plant and 0.524 $MTCO_2e$/MWh for an advanced combustion turbine power plant (CEC 2019). Assuming up to 365 charging and discharging cycles per year, the proposed BESS system could displace GHG emissions ranging from 168,630 to 229,512 $MTCO_2e$ annually.

However, the project would have indirect GHG emissions during operation due to energy losses during transmission and battery charging cycles, and due to auxiliary loads including BESS module thermal management systems (TMS), supervisory control and data acquisition system, and other energy-consuming equipment (TT 2025g). As shown in **Table 5.3-2** below, the applicant estimated that the total indirect GHG emissions due to round-trip efficiency losses and auxiliary loads would be 8,913 $MTCO_2e$/year (TT 2026e).

TABLE 5.3-2 ESTIMATED INDIRECT OPERATIONAL GREENHOUSE GAS EMISSIONS			
	Emissions (lb/MWh)		
Pacific Gas and Electric Company	203.983	0.033	0.004
Annual Indirect GHG Emissions	**CO_2**	**CH_4**	**N_2O**
	Emissions (Metric tons)		
Indirect GHG Emissions from Round-Trip Efficiency Losses	6,886	1.11	0.14
Indirect GHG Emissions from Auxiliary Loads	1,940	0.31	0.04
Total Indirect GHG Emissions from BESS Operation	8,826	1.43	0.17
Global Warming Equivalence Factor	1	25	298
Equivalent CO_2e Emissions[1]	8,826	35.70	51.57
Total Indirect Operational GHG Emissions (CO_2e)	**8,913**		

Source: Updated with PD#2 Part 2, TT 2026e.
Note: 1 Equivalent CO2e Emissions = Indirect GHG Emissions x Global Warming Equivalent Factor.

When accounting for indirect GHG emissions associated with round-trip efficiency losses and auxiliary loads, the BESS system is still expected to result in a net reduction in GHG emissions. CEC staff estimates that the net displaced GHG emissions may range from 159,717 to 220,599 $MTCO_2e$ annually. The displaced GHG emissions would be higher if the project uses non-peak power produced from solar facilities for charging.

Upon completion of construction, operation of the project would not result in a notable incremental increase in GHG emissions from operation and maintenance activities, as the facility would be operated remotely and require minimal maintenance.

Although some energy losses occur during charging and discharging cycles, as well as from auxiliary loads, the proposed BESS would provide an overall net benefit by reducing GHG emissions associated with conventional energy generation.

Emissions during BESS Thermal Runaway/Fire Events

As shown in **Table 5.3-1**, a BESS thermal runaway or fire event is estimated to generate approximately 25 metric tons of CO_2 per event. **Appendix D, Dispersion and Frequency Analysis**, estimates that such an event could occur once every 11 to 67 years. Over a 30-year project lifetime, this corresponds to an estimated 2 to 3 events, conservatively assuming one event every 11 years. The total CO_2 emissions over the life of the project would therefore range from 50 to 75 metric tons, which

equates to approximately 1.7 to 2.5 metric tons of CO_2 per year when amortized over the project duration.

Total Operational Emissions

As shown in **Table 5.3-1**, the total direct annual operational GHG emissions would be approximately 48.0 $MTCO_2e$ per year. Combined with the amortized construction emissions of 123 $MTCO_2e$ per year, the project would result in direct GHG emissions of approximately 171 $MTCO_2e$ per year. The emissions estimation includes those from project components both jurisdictional and non-jurisdictional. These operational emissions would comply with and be less than CAPCOA's threshold of significance, which is annual emissions of less than 900 $MTCO_2e$ per year. In addition, as stated above, CEC staff estimates that the BESS system could displace net GHG emissions ranging from 159,546 to 220,428 $MTCO_2e$ annually. Because the project would cause direct emissions at levels less than the applicable threshold and provide overall beneficial effects of displacing GHG from natural gas-fired power plants used for energy generation, this impact would be less than significant.

Non-Jurisdictional Components

The GHG emissions quantification in **Table 5.3-1** shows that for the new Corby Bay substation, GHG emissions generated during operation and maintenance would be around 9.6 $MTCO_2e$/year, which would be considerably less than the quantity of avoided GHG emissions, and that the proposed facility (including all project components) would lead to a net reduction in GHG emissions across the State's electricity system.

CARB has implemented phasing requirements for the elimination of SF_6 from electrical equipment, including circuit breakers. While the analysis assumes that all circuit breakers would contain SF_6, circuit breakers in the later phases may not contain SF_6 and/or as circuit breakers are replaced, they would be replaced with non-SF_6 technology. As estimated in **Table 5.3-1** of this analysis, CEC staff assumed the maximum amount of SF_6 per circuit breaker and depending on the circuit breaker actually used, SF_6 content may be substantially less than assumed in **Table 5.3-1** of 9.6 $MTCO_2e$. Therefore, GHG emissions reported for the substations are conservative.

Operation and maintenance activities associated with the interconnection facilities and the Corby Bay substation would be performed remotely by PG&E and therefore would result in minimal emissions from vehicle trips to and from these components once construction is completed. No diesel generators or other nonelectric equipment would be used that result in GHG emissions. Therefore, project impact would be less than significant.

b. Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

Construction and Operations

No Impact. BESS facilities, like the proposed project, are key technologies that effectuate the state's renewable energy and GHG emission reduction policies as well as local GHG policies.

Achieving the renewable energy targets mandated by the RPS is critical to California achieving its GHG targets and statewide carbon neutrality as established by the California Climate Crisis Act of 2022 (AB 1279). The CARB 2022 Climate Change Scoping Plan identifies decarbonizing the electricity sector as a crucial pillar of achieving carbon neutrality (CARB 2022). The California Global Warming Solutions Act of 2006 (AB 32) and Senate Bill 32 (SB 32) of 2016 codified the GHG emissions target to 40 percent below the 1990 level by 2030. Subsequently, California's Clean Energy and Pollution Reduction Act of 2015 [Senate Bill 350 (SB 350)], set ambitious 2030 targets for energy efficiency and renewable electricity, among other actions aimed at reducing GHG emissions across the energy and transportation sectors. SB 350 also connects long-term planning for electricity needs with the state's climate targets, with CARB establishing 2030 GHG emissions targets for the electricity sector in general (CARB 2022). The current RPS was signed into law in September 2018 with Senate Bill 100 (SB 100), which established the goals of 50 percent renewable energy resources by 2026 and 60 percent renewable energy resources by 2030. SB 100 also sets a target for California to achieve a GHG-free energy supply by December 31, 2045.

The project would be consistent with MTC & ABAG Plan Bay Area 2050, which encourages the storage of electrical energy for additional grid support during peak demand addressing climate goals set by the state.

The state of California projects 52,000 MW of battery storage will be needed by 2045 to reach the state's renewable and carbon free energy goals. Currently there are approximately 14,000 MW of utility scale BESS in the state. (https://www.energy.ca.gov/data-reports/energy-almanac/california-electricity-data/california-energy-storage-system-survey)

This project will contribute to the growing fleet of BESS in the state. Thus, the construction and operations of the project including use of equipment and construction vehicles would not conflict with any GHG related plan, policy, or regulations, but is necessary to support the state's identified storge objectives.

Refrigerant Prohibition

As mentioned above, the applicant proposed the use of refrigerants R-513a and HFC-32 for BESS cooling (TT 2026i). R-513a has a GWP of 631 and HFC-32 has a GWP of 675 (IPCC 2014). Under regulation Prohibitions on Use of Certain Hydrofluorocarbons (HFCs) in Stationary Refrigeration, Stationary Air-conditioning and Other End-Uses (California Code of Regulations, Title 17, Division 3, Chapter 1, Subchapter 10 Climate Change, Article 4, Subarticle 5), refrigerants with a GWP of 750 or greater have been

prohibited as of January 1, 2024, for new chillers (CARB 2021). The use of R-513a and HFC-32 would be permissible for use.

The operation of the BESS cooling units would be consistent with all regulations or requirements adopted to implement a statewide, regional, or local plan for the reduction or mitigation of GHG emissions, and the proposed project would not conflict with any applicable GHG management plan, policy, or regulation. Thus, there would be no impact.

5.3.2.3 Cumulative Impacts

Construction and Operation

Less Than Significant Impact. The impact analysis for GHG emissions is global in nature, and the project's GHG emissions are considered in the broad context of global climate change. The focus of this analysis is to disclose the project's effect on climate change, while presenting the quantity of GHG emissions. The State CEQA Guidelines provide that a project's incremental contribution to a cumulative GHG emissions effect may be determined not to be significant and the effects of the project to not be cumulatively considerable if the project complies with the requirements of the state's long-term climate goals or strategies.

The BESS project would lead to a net reduction in GHG emissions across the State's electricity system, and the GHG emissions related to the project, including jurisdictional components and non-jurisdictional components, would not conflict with any LORS adopted for the purpose of reducing the emissions of GHGs. Therefore, the project's GHG emissions would not be cumulatively considerable because the project's net contribution is negative through displacement of natural gas generation, especially during the early evening period, when large amounts of solar come off the system.

5.3.3 Project Conformance with Applicable LORS

Table 5.3-3 indicates CEC staff's determination of consistency with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the project would conform with LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the proposed project would conform with all applicable LORS. The subsection "5.3.5 Proposed Conditions of Certification" below contains the full text of the referenced COCs.

TABLE 5.3-3 PROJECT CONSISTENCY WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
None.	
State	
2022 Scoping Plan	**Yes.** The proposed battery energy storage facility would provide electricity to facilitate compliance with California's RPS and would lead to a net

TABLE 5.3-3 PROJECT CONSISTENCY WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	reduction in GHG emissions across the State's electricity system.
CARB SF_6 Reduction Requirements	**Yes.** The project would comply with GHG emissions reduction requirements through conformance with reporting and phase-out requirements of this regulation.
Short-Lived Climate Pollutant (SLCP) Strategy	**Yes.** The project would comply with GHG emissions reduction requirements.
Local	
MTC & ABAG Plan Bay Area 2050 (RTP/SCS)	**Yes.** The proposed project would be consistent with the plan goals through the implementation of the BESS facility that would store electrical energy for additional grid support during peak demand addressing climate goals set by the state.
Solano County General Plan	
Policy HS.P-89: Promote greenhouse gas emission reductions by supporting carbon efficient farming methods (e.g., methane capture systems, no-till farming, crop rotation, cover cropping, residue farming); installation of renewable energy technologies; protection of grasslands, open space, and farmlands from conversion to other uses; and encouraging development of energy-efficient structures. HS.I-60: Require the implementation of best management practices to reduce air pollutant emissions associated with the construction of all development and infrastructure projects RS.P-52: Ensure adequate and affordable supplies of energy to meet the energy needs of the count. RS.P-53: Enable renewable energy sources to be produced from resources available in Solano County, such as solar, water, wind, and biofuels to reduce the reliance on energy resources from outside the county. RS.P-57: Encourage the use of technology or siting to minimize adverse impacts from energy production facilities on the environment, including wildlife and agricultural resources. RS.P-59: Encourage on-site renewable energy production and use and energy conservation measures.	**Yes.** The proposed battery energy storage facility would be consistent and promote GHG emission reductions by installing renewable energy technologies and would lead to a net reduction in GHG emissions across the County's electricity system.

5.3.4 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to GHG emissions and would comply with applicable LORS. CEC staff does not recommend any additional COCs related to climate change and GHG emissions.

Impacts associated with the project non-jurisdictional components to be considered for permitting by CPUC would be less than significant.

5.3.5 Proposed Conditions of Certification

As discussed above, the project would have a less than significant impact related to climate change and GHG emissions and would conform with applicable LORS. CEC staff does not recommend any additional conditions of certification related to climate change and GHG emissions.

5.3.6 Recommended Mitigation Measures

For the project's non-jurisdictional components, CEC staff does not recommend any additional mitigation measures related to climate change and GHG emissions measure.

5.3.7 References

CAPCOA 2008 – (California Air Pollution Control Officers Association). CEQA & Climate Change: Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act. January 2008. Available online at: https://planning.lacity.gov/eir/8150Sunset/References/4.E.%20Greenhouse%20Gas%20Emissions/GHG.02_CAPCOA%20CEQA%20and%20Climate%20Change.pdf?1344472764

CAPCOA 2022 – California Air Pollution Control Officers Association (CAPCOA). CalEEMod, User's Guide. Appendix G, Default Data Tables, Table G-3. April 2022. Accessed on March 17, 2026. Available online at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.caleemod.com%2Fdocuments%2Fuser-guide%2F08_Appendix%2520G_v2022.1.1.34.xlsx&wdOrigin=BROWSELINK

CARB 2014 – California Air Resources Board (CARB). First Update to the Climate Change Scoping Plan. Dated May 2014. Accessed on March 17, 2026. Available online at: https://ww3.arb.ca.gov/cc/scopingplan/2013_update/first_update_climate_change_scoping_plan.pdf

CARB 2017a – California Air Resources Board (CARB). 2017 Climate Change Scoping Plan Update: The Strategy for Achieving California's 2030 GHG Target. Dated November 2017. Accessed on March 17, 2026. Available online at: https://ww3.arb.ca.gov/cc/scopingplan/scoping_plan_2017.pdf

CARB 2017b – California Air Resources Board (CARB). Short-Lived Climate Pollutant Reduction Strategy. Dated March 2017. Accessed on March 17, 2026. Available online at: https://ww2.arb.ca.gov/sites/default/files/2020-07/final_SLCP_strategy.pdf

CARB 2018 – California Air Resources Board (CARB). SB 375 Regional Plan Climate Targets. Dated March 2018. Accessed on March 17, 2026. Available online at: https://ww2.arb.ca.gov/our-work/programs/sustainable-communities-program/sb-375-regional-targets

CARB 2021 – CARB Prohibitions on Use of Certain Hydrofluorocarbons in Stationary Refrigeration, Chillers, Aerosols-Propellants, and Foam End-Uses Regulation. Approved on December 29, 2021. Effective October 1, 2022. Accessed on March 17, 2026. Available online at: https://ww2.arb.ca.gov/sites/default/files/barcu/regact/2020/hfc2020/frorevised.pdf

CARB 2022 – California Air Resources Board (CARB). 2022 Scoping Plan for Achieving Carbon Neutrality. Dated November 16, 2022. Accessed on March 17, 2026. Available online at: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp_1.pdf

CARB 2024 – California Air Resources Board (CARB). California Greenhouse Gas Inventory for 2000-2022 — Trends of Emissions and Other Indicators. Dated September 20, 2024. Accessed on March 17, 2026. Available online at: https://ww2.arb.ca.gov/sites/default/files/2024-09/nc-2000_2022_ghg_inventory_trends.pdf

CEC 2019 – California Energy Commission (CEC). Staff Report. "Estimated Cost of New Utility-Scale Generation in California: 2018 Update." CEC-200-2019-500. Dated May 2019. Accessed on March 17, 2026. Available online at: https://www.energy.ca.gov/sites/default/files/2021-06/CEC-200-2019-005.pdf

CEC 2022 – California Energy Commission (CEC). Final 2021 Integrated Energy Policy Report (IEPR), Volume II - Ensuring Reliability in a Changing Climate. Dated February 17, 2022. Accessed on March 17, 2026. Available online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=241583

CPUC 2022 – California Public Utilities Commission (CPUC). Greenhouse Gas and Criteria Pollutant Accounting Methodology for use in Load-Serving Entity Portfolio Development in 2022 Integrated Resource Plans. Dated July 2022. Accessed on March 17, 2026. Available online at: https://www.cpuc.ca.gov/-/media/cpuc-website/divisions/energy-division/documents/integrated-resource-plan-and-long-term-procurement-plan-irp-ltpp/2022-irp-cycle-events-and-materials/clean-system-power-calculator-documentation.pdf

IPCC 2014 – Intergovernmental Panel on Climate Change. The Synthesis Report (SYR) of the IPCC Fifth Assessment Report (AR5). Dated October 2014. Accessed on March 17, 2026. Found online at: https://www.ipcc.ch/assessment-report/ar5/

MTC & ABAG 2021 – Metropolitan Transportation Commission and Association of Bay Area Governments (MTC & ABAG). Plan Bay Area 2050. Adopted October 21, 2021. Accessed on December 16, 2025. Accessed online at: https://planbayarea.org/sites/default/files/documents/Plan_Bay_Area_2050_October_2021.pdf

MTC & ABAG 2026 – Metropolitan Transportation Commission and Association of Bay Area Governments (MTC & ABAG). Plan Bay Area 2050+. Accessed on March 20, 2026. Accessed online at: https://abag.ca.gov/our-work/land-use/plan-bay-area-2050

OEHHA 2022 – Office of Environmental Health Hazard Assessment (OEHHA). Indicators of Climate Change in California, Fourth Edition, California Environmental Protection Agency. November 2022. Available online at: https://oehha.ca.gov/media/downloads/climate-change/document/2022caindicatorsreport.pdf

SCAQMD 2008 – (South Coast Air Quality Management District). Draft Guidance Document – Interim CEQA Greenhouse Gas (GHG) Significance Threshold. Available online at: https://www.aqmd.gov/docs/default-source/ceqa/handbook/greenhouse-gases-(ghg)-ceqa-significance-thresholds/year-2008-2009/ghg-meeting-6/ghg-meeting-6-guidance-document-discussion.pdf?sfvrsn=2.

Solano County 2008 – Solano County. Solano County General Plan. Adopted August 2008. Accessed March 17, 2026. Accessed online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp

Solano County 2011 – Climate Action Plan. Available online at: https://www.solanocounty.gov/government/resource-management/planning-services/environmental-management-sustainability/climate-action-plan-sea-level-rise

TT 2025d – Tetra Tech (TN 263281). Data Request Responses Set #2 Part 1. Dated May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025e – Tetra Tech (TN 263282). Data Request Responses Set #2 Part 2. Dated May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025g – Tetra Tech (TN 263284). Air Quality and Greenhouse Gas Technical Report. Dated May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026e – Tetra Tech (TN 268433). Project Description Update #2, Part 2. Dated February 2, 2026. Accessed online

at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026g – Tetra Tech (TN 268540). Application Section 2 Project Description markup file. Dated February 9, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026i – Tetra Tech (TN 269410). Data Response Set #6. Dated April 3, 2026. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=269410&DocumentContentId=106503

UNFCCC 1998 – United Nations Framework Convention on Climate Change, adopted on December 11, 1997. Accessed on March 17, 2026 at https://unfccc.int/process-and-meetings/the-kyoto-protocol

U.S. EPA 2024 – U.S. Environmental Protection Agency (U.S. EPA). Inventory of U.S. Greenhouse Gas Emissions and Sinks. Accessed on March 17, 2026. Available online at: https://www.epa.gov/ghgemissions/inventory-us-greenhouse-gas-emissions-and-sinks

Vacaville 2015 – City of Vacaville General Plan. Accessed March 17, 2026. Available online at: https://www.cityofvacaville.gov/government/community-development/general-plan

5.4 Cultural and Tribal Cultural Resources

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to cultural and tribal cultural resources. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.4.1 Environmental Setting

Existing Conditions

The applicant's appropriately qualified cultural resource consultants prepared and revised various confidential cultural documents for the Corby Battery Energy Storage System (BESS) Project (project). The two primary documents used herein are the updated February 2025 Cultural Resources Report for the Corby BESS Project in Solano County, California (ICF 2025), and the November 2024 Corby BESS Opt-in Application Volume 1 Part 1 (TT 2024a). Additional docketed items containing relevant data used herein include updated project descriptions (TT 2025c; TT 2026e). Finally, a Department of Parks and Recreation 523 site record update was prepared by CEC staff to supplement the original consultant-prepared site record for the residence at 5310 Kilkenny Road. This update is on file at CEC's Cultural Resources Unit and the appropriate information center. This update was prepared following receipt of a public comment letter from the Solano County Historical Society (SCHS 2025).

The proposed project is in Sections 1 and 2 of Township 6 North and Ranges 1 West and 1 East on the Allendale, California U.S. Geological Survey 7.5-minute Series Quadrangle (ICF 2025, page 2-1). The proposed project BESS installation site consists of an approximately 40.3-acre privately owned parcel in Solano County, California. The proposed project would connect to the PG&E Vaca-Dixon Substation, northwest of the project site and across Interstate (I) 80, via a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line, portions of which would be installed overhead and underground (TT 2025c, page 2-1).

The permanent operational facility, including the BESS array, project substation, associated equipment, roads, fencing, sound barrier, optional groundwater well, water tank, and drainage facilities, would be located on a 40.3-acre parcel (project site) in Solano County. The project site includes the entirety of Assessor's Parcel Number 0141-030-090. The project parcel is bound on all sides by existing agricultural lands, with a rural residence located across Kilkenny Road directly to the north. This residential property is located approximately 57 feet to the north from the project site boundary. The proposed BESS facility would be located approximately 800 feet from the residential property boundary, and approximately 900 feet from the residential structure. Additional rural residences also exist in the project vicinity, both to the south and west of the project site. The project site is located approximately 250 feet

southeast of the City of Vacaville jurisdictional boundary, and approximately 5 miles northeast of the city center. I-80 is 0.6 miles northwest of the project site. The nearest airports to the project site are Nut Tree Airport, located 2.9 miles southwest of the project site and Travis Air Force Base located approximately 7.25 miles north of the project site (ICF 2025, page 3-2).

The project site is located within a geologic region that is known as the Great Valley Geomorphic Province. The Great Valley covers more than 6,500 square miles. It is bounded on the west by the Great Valley fault zone and the Coast Ranges, and on the east by the Sierra Nevada and the Foothills fault zone. Today, much of the surface of the Great Valley is covered with Holocene (11,700 Before Present (B.P.) to present) and Pleistocene (2.6 million B.P. to 11,700 B.P.) alluvium composed of sediments transported by water from the Sierra Nevada to the east and Coast Ranges to the west. Currently, the project site is within and surrounded by agricultural uses, with an orchard to the south, irrigated pasture to the east and west, and rural residential to the north (TT 2024l). The project site has not been subject to substantial disturbances outside of general agricultural and ranching activities. Based on the archaeological investigation, background research, and subsurface sensitivity analysis, there is low to moderate potential for the inadvertent disturbance of cultural resources from the project (ICF 2025, page 8-2).

The methods employed for the cultural and tribal cultural resources analysis include determining proposed project impact areas; reviewing records and other documents provided by a literature search and other historical sources; consultation with California Native American tribes; and conducting historic architectural and archaeological surveys. To this end the applicant's consultant first developed a Cultural Resources Study Area which comprises Study Areas for archaeological resources and a larger Study Area for built environment resources. The Study Area for archaeological resources includes the project footprint which covers all project components and staging areas plus a 200-foot buffer around all project components. The Study Area for built environment resources includes the project footprint plus a half-mile buffer around all project components (ICF 2025, page 5-1).

Project Area of Analysis

The proposed Project Area of Analysis (PAA) was developed by incorporating consultant developed study areas for archaeology and the built environment and in analyzing the proposed ground disturbance and surrounding visual impacts. These various areas are depicted in the updated February 2025 Cultural Resources Report as Figures 1, 2, 4, and 3a-c: Cultural Resources Study Area (ICF 2025, Appendix A). As utilized herein, the designator cultural resources study area, built environment study area, archaeological study area, are synonymous with or components of the designator PAA.

Archaeological Context

The taxonomic framework of the Sacramento Valley is described in the following sections in terms of chronology, with archaeological patterns discussed where they

apply. Three patterns were introduced: Windmiller, Berkeley, and Augustine. These patterns, while generally corresponding to the early, middle, and late horizons within the Central Valley, were conceptually different and free of spatial and temporal constraints. In this chronology, periods served as arbitrary intervals that could be used to compare patterns over space and time. Only with the clear identification of pervasive temporal patterns would periods acquire specific archaeological meaning (ICF 2025, page 5-1).

Paleo-Indian (ca. 13,550–10,550 B.P.)

At the end of the Pleistocene, circa 13,550–10,550 B.P., parts of the Sierra Nevada adjacent to the Central Valley were covered with large glaciers, and the Central Valley provided a major transportation route for animals and people. This transportation corridor, perhaps rivaled only by maritime coastal route, was undoubtedly used heavily by early inhabitants of the region. Evidence for human occupation during this period is scarce, likely because remains have been buried by deep alluvial sediments that accumulated rapidly during the late Holocene (ICF 2025, page 5-1).

Although rare, archaeological remains of this early period have been reported in and around the Central Valley and for use of the Mokelumne River area, under what is now Camanche Reservoir, during the late Pleistocene. Archaeologists working at Camanche Reservoir also found a number of lithic cores and a flake that are associated with Pleistocene gravels. These archaeological remains were grouped into what is called the Farmington Complex, which is characterized by core tools and large, reworked percussion flakes (ICF 2025, page 5-1 and 5-2).

The economy of the Central Valley residents during the late Pleistocene is thought to have been based on the hunting of large Pleistocene mammals. Although no direct evidence of this exists in the Central Valley, the similarity of the artifact assemblages to those of other locations in western North America lends some support to the notion of a large-game economic focus. Much of the Pleistocene megafauna became extinct during the Pleistocene/Holocene transition. To survive without large game, people had to change their food procurement strategies to make use of a more diverse range of smaller plants and animals (ICF 2025, page 5-2).

Lower Archaic (ca. 10,550–7550 B.P.)

During the Lower Archaic, beginning approximately 10,550 B.P., there appears to be a shift to a more specialized subsistence strategy, focusing on ways of increasing the amount of food that could be produced from smaller portions of land. This change can be at least partially corroborated by the increasing numbers of people living in the Central Valley, which is indicated by a much more abundant archaeological record, as well as by dietary stress, as indicated by dental pathologies. As the population slowly increased, it became more difficult for people to obtain seasonally available resources (ICF 2025, page 5-2).

Reliance on a wider range of smaller resources meant that people needed access to larger areas of land to hunt and collect food and other resources than they had previously required. This is likely manifested by small groups of people moving through the valley, foothills, and Sierra Nevada to take advantage of seasonally available resources and resources limited to particular ecozones. This mobile foraging strategy was essential to their survival (ICF 2025, page 5-2).

Use of a more diverse number of seasonal resources had several consequences. First, people had to move around from one area to another to take advantage of the seasonal availability of particular resources. Second, large areas of land were needed to ensure that enough resources were available during all times of the year. Third, more specialized tools were necessary to procure and process the wider range of plants and animals that were being used (ICF 2025, page 5-2).

Middle Archaic (ca. 7550–2550 B.P.)

The beginnings of the intensification emerging in the Lower Archaic manifested even more so in the Middle Archaic. The regional pattern representing the Middle Archaic is the Windmiller Pattern. The Windmiller Pattern shows evidence of a mixed economy of game procurement, use of wild plant foods and trade. Artifacts and faunal remains at Windmiller sites include seeds, a variety of small game, and fish. The archaeological record contains numerous projectile points and a wide range of faunal remains. Trade is reflected in the material from which utilitarian, ornamental, and ceremonial objects were produced (ICF 2025, page 5-2 and 5-3).

Windmiller Pattern origins are believed to be linked to the arrival of Utian peoples (ancestors to the Maidu) from outside California who were adapted to riverine and wetland environments. Windmiller sites are concentrated on low rises or knolls in the floodplains of major creeks or rivers. Such locations provided protection from seasonal flooding and proximity to riverine, marsh, and valley grassland biotic communities. Burials following this pattern consisted of formal cemeteries, both within and separate from villages, suggesting a degree of sedentism (ICF 2025, page 5-3).

During the Middle Archaic, the Central Valley population continued to increase, and inhabitants responded in two ways. First, they increased the use of the marshlands of the Sacramento–San Joaquin Delta (Delta), which were much more extensive and richer in food resources than they are today. Second, they increased the use of the acorn as a food source evidenced by an increase of mortars and pestles in the assemblages. People following these strategies were more sedentary than they had been in the past, and village sites were found throughout the valley along rivers and near other areas with permanent sources of water. An economic shift from a foraging to a collecting strategy likely occurred during the Middle Archaic (ICF 2025, page 5-3).

Another regional pattern found during the Middle Archaic is the Berkeley Pattern (3500–2500 B.P.). While Windmiller Pattern sites seem to occur with more frequency in or near the Delta, Berkeley Pattern sites tend to be more prevalent farther north. Berkeley

Pattern sites are more numerous and more widely distributed than Windmiller Pattern sites; they are characterized by deep midden deposits, suggesting intensified occupation and a broadened subsistence base. The Berkeley Pattern also has a greater emphasis on the exploitation of the acorn as a staple. Although gathered resources gained importance during this period, the continued presence of projectile points and atlatls (spear-throwers) in the archaeological record indicates that hunting was still an important activity. This pattern is also noted for its especially well-developed bone industry and such technological innovations as ribbon flaking of chipped-stone artifacts. (ICF 2025, page 5-3).

Artifacts and practices shared by Berkeley Pattern and Windmiller Pattern material culture include mortars and pestles, millingstones and handstones, quartz crystals, charmstones, projectile points, shell beads and ornaments, and bone tools. New elements include steatite beads, tubes and ear ornaments, slate pendants, and burial of the dead in flexed positions with variable orientation or cremations accompanied by fewer grave goods. Trade continued to be important (ICF 2025, page 5-3 and 5-4).

Upper Archaic (ca. 2550–925 B.P.) to Emergent (925 B.P. to Historic Period)

The Middle Archaic-Upper Archaic transition, which took place at the beginning of the Upper Archaic Period, corresponds with a dramatic climatic shift to cooler, wetter conditions. These conditions resulted in filling of inland lakes and greater freshwater flow through the Delta. Overall, the Upper Archaic is characterized by a proliferation and increased distinction of artifact types, burial positions, and specialized technologies, such as widespread manufacture of ceremonial blades, obsidian biface blanks, olive snail and abalone beads and ornaments, and groundstone net sinkers (ICF 2025, page 5-4).

Dominant food resources in the Central Valley during the Upper Archaic consisted of acorns, salmon, shellfish, rabbit, and deer. In general, settlements became increasingly larger and of a more sedentary nature. A generalized subsistence pattern with a high degree of technological specialization, termed the Augustine Pattern (1200 B.P. to Historic Period), is first evident during the Lower Archaic. Development of the Augustine Pattern apparently was stimulated by the southward expansion of Wintuan populations into the Sacramento Valley. The Augustine Pattern reflects a change in subsistence and land use patterns to those of the ethnographically known people of the historic period. This pattern exhibits a great elaboration of ceremonial and social organization, including the development of social stratification (ICF 2025, page 5-4).

The trends toward specialization, exchange, and spatial circumscription that characterized prior periods continued in the Emergent Period. Population continued to increase, and group territories continued to become smaller and more defined. Patterns in the activities, social relationships, belief systems, and material culture continued to develop during this period and took forms similar to those described by the first Europeans that entered the area (ICF 2025, page 5-4).

Ethnographic Context

The Project falls within the southern boundary of the Penutian language family in an area ethnographically occupied by Patwin-speaking groups. The Penutian language family is made up of Wintun speakers, along with the Miwok, Maidu, Costanoan, and Yokuts. The word Patwin is a native word meaning “people,” and it was used by several tribelets in reference to themselves. It has since been used to distinguish southern Wintun from similar groups in the north. The Patwin were prehistorically bounded to the north near the approximate location of the modern town of Princeton, California; to the south by the Suisun Bay; to the west by Clear Lake and the Napa Ranges; and to the east by the Sutter Buttes and the Sacramento River (ICF 2025, page 5-5).

In all, this territory encompassed an area approximately 90 miles north to south and 40 miles east to west. Like all west-central California people, the Patwin probably moved seasonally within their territory between a small number of semi-permanent villages and a great number of temporary campsites. Most of the population was concentrated along major waterways in large villages, though most of the plains were submerged in winter and dry in the summer, and occupation of these plains was sparse and seasonal. Patwin tribelets in the hills lived in the numerous intermontane valleys, particularly along the drainages of Cache and Putah Creeks (ICF 2025, page 5-5).

The closest Patwin village, Ulula-to, was located within 5 miles of the current Project Study Area and within the southern Wintun territory. The Patwin-speaking group was divided into many different dialects. According to Milliken (1995), the people on the north shore of Suisun Bay in the Fairfield and Vacaville area were known as the Suisuns, a subgroup of the Patwin, and were not culturally identical to their neighbors in the Grimes and Colusa areas to the north, with whom they shared the Patwin language. The Suisun territory stretched between Suisun Bay, Vacaville and Putah Creek. Mission register evidence shows that the Suisuns were heavily intermarried with the Bay Miwok-speaking Chupcans across Suisun Bay to the south. Situated as it is along a language boundary, Suisun culture may have been influenced strongly by elements of groups to the south and to the west—groups whose traditions differed from those of the peoples in the Sacramento Valley, the Patwin heartland (ICF 2025, page 5-5).

The main Patwin political unit was the tribelet, consisting of one primary and several satellite villages, with a definite sense of territoriality and autonomy. Within each tribelet were several political and social distinctions. Each village had a chief who directed village activities, primarily by administrating economic and ceremonial activities. The position of chief was the highest rank attainable and was passed from father to son or was conferred by the village elders (ICF 2025, page 5-5).

Patwin from the village Ulula-to and other nearby villages were proselytized by the Mission San Jose and Mission Dolores. The Southern Patwin were dislocated immediately following Spanish contact, and many were forced into subjugation at the missions. By 1821, nearly all Patwins had been removed from their homeland and were

baptized. In 1824, many of these converts were moved to Mission San Francisco Solano in Sonoma Valley to form a core population at the new mission. White settlement of the area in the 1850s resulted in the dislocation of the remaining Patwin and assimilation to a white labor economy. By 1972, the Bureau of Indian Affairs census listed only 11 Patwin individuals (ICF 2025, page 5-6). Many more Patwin individuals and tribes live in California today (see "Tribal Consultation" in Subsection 5.4.2.1 below).

Historic Period Context

Early Frontier Settlement 1776 to 1848

The history of Solano County is associated with early Spanish colonization efforts, subsequent Mexican and Euro-American open-range livestock ranching and waterfowl hunting, and the early sociopolitical development of California. This context focuses on the Spanish colonization efforts in the San Francisco Bay Area which began with military and missionary expeditions extending north into Alta California from Spain's established religious and economic settlements in northern Mexico. Catholic missions in San Francisco and Santa Clara, military forts (presidios) in Monterrey and San Francisco, and a secular town (pueblo) in San Jose were founded in the Bay Area in 1776 and 1777. To compensate for high mortality rates among its neophytes, the Bay Area missions began recruiting Patwin and Miwok populations from inland areas, including the Suisun Bay region. The missions established European-style farming and ranching along the coast. The inland bay and Delta region was used primarily for hunting and trapping by Spanish and Euro-American companies during this period (ICF 2025, page 5-6).

Following the Mexican War of Independence and political reorganization in 1821, the Spanish missions were secularized and numerous properties incorporated into the Mexican Rancho land grant system. The Solano County area became part of the Sonoma District, governed by General Marianno Vallejo. Under Vallejo, the Suisun Marsh uplands were used primarily for cattle ranching, and the brackish waterways were used to transport hides and tallow. During this period, Juan Manuel Vaca was granted a portion of the Mexican Land Grant Rancho Los Putos. In 1851, he sold the majority of this land to William McDaniel, on the condition that a 1-square-mile area be used to create a township named "Vacaville." Ultimately, rising tensions between Mexico and the United States led to the Mexican War and the Treaty of Guadalupe Hidalgo (1848), in which Mexico ceded Alta California to the United States (ICF 2025, page 5-6).

Statehood and Early Development 1849 to 1920

The mid-nineteenth century saw socioeconomic developments that began to have a significant effect on Solano County and the Suisun Marsh landscape. The discovery of gold at Coloma in 1848 provoked miners, merchants, and speculators to arrive en masse to the Sacramento–San Francisco region, fueling a new gold mining economy. The sudden growth in population and economy prompted California's U.S. statehood in 1850. The state capital was established in San Jose (1850–1851), moved to Vallejo

(1852–1853) and Benicia (1853–1854) in Solano County, and finally settled in Sacramento in 1855. (ICF 2025, page 5-7).

The earliest agricultural use of land in Solano County was livestock, specifically sheep and cattle brought to the area in the 1850s by pioneers and former gold miners. Within the next decade, the area had become one of California's top wheat-producing areas. Early settlers frequently planted small amounts of fruit trees near their homes for personal consumption. When the railroad arrived in 1868, the orchard industry around Vacaville and Fairfield began to boom, assisted by the labor provided by Chinese workers who had arrived to work on the railroads and Japanese workers who arrived in 1890s. While many small family farms successfully transitioned to fruit production, much of the area was not suited to orchards and continued to specialize in grain production and livestock. The small-scale fruit tree and grain production were able to subsist on annual rainfall, supported by tank houses and irrigation ponds on individual properties, but large-scale New Deal-era irrigation projects in the San Joaquin Valley allowed fruit producers there to outpace the smaller Solano County farmers (ICF 2025, page 5-8).

Development of agricultural land, which started in the 1850s, intensified and persisted through to the present. Today over 62 percent of the land in Solano County is devoted to agriculture use; half of this area is used for irrigated agriculture, and the other half is devoted to dryland farming and grazing. Near Vacaville, in 1921, the Power family first opened the Nut Tree, a fruit stand near Vacaville. The business was so successful that by 1923, the Nut Tree had grown significantly and began to serve hot food (ICF 2025, page 5-7).

Solano County Agriculture and Development of Vacaville 1920 to Present

The trend of growth which began in 1921 continued from the 1930s through the 1990s, with development of the Nut Tree and the surrounding area as an extensive shopping and family entertainment complex. From the early-twentieth century through the present, agriculture has remained a driving force behind the economy of Solano County. This environment, rich in agricultural wealth, led to investment in the community by ranching families. By 2022, a relatively large proportion of Vacaville's economy was made up of retail businesses that grew in the wake of the establishment of the Nut Tree (ICF 2025, page 5-7).

Residential Agricultural Properties

Over half of Solano County is designated as agricultural use with more than 800 farms occupying the region. Within the study area, there are several property types associated with agricultural use including individual ranchettes, large orchards and pastures, labor camps, and processing facilities. Agricultural complexes typically consist of a primary residence and, in the case of larger complexes, one or more secondary residences, as well as assemblages of barns and predominantly utilitarian buildings and structures with specific animal-husbandry, crop-production, or equipment-maintenance

functions. Agricultural complexes also typically include landscape components such as orchards, pastures, or crop fields (ICF 2025, page 5-8).

Solano County is presently composed of 10 distinct agricultural regions with residential architecture exhibiting Anglo-American and vernacular styles spanning over a century and a half. The nineteenth century development includes agricultural properties with primary residences that include the Greek revival, Italianate, Queen Anne, and Folk Victorian styles, and many of these styles can be found within residences on farms, smaller ranchettes, and in small towns and unincorporated areas throughout the county. The properties often featured a main house setback from the road surrounded by accessory structures, groves, and other farmland types. Residences span a wide socioeconomic range, from modest vernacular cottages in the smaller towns to grand Beaux-Arts mansions on the pioneering farms and ranches (ICF 2025, page 5-8).

Residential buildings in Solano County constructed during the twentieth century include Craftsman-style bungalows, and Foursquare, Colonial Revival, Spanish Colonial Revival, Minimal Traditional, or Ranch-style residences. These buildings were mainly constructed during the first half of the twentieth century in both urban and rural settings. The grand period revival farm and Ranch mansions from the 1910s and 1920s represent some of the more striking property types. Rural homes also typically exist within a cluster of farmstead buildings such as barns, packing sheds, equipment sheds, and tank houses (ICF 2025, page 5-8).

Agricultural buildings and structures in the Study Area date from circa (c.) 1900 to contemporary construction and alterations, and include residences, barns, and accessory structures such as tank houses. Many of the built environment's agricultural resources date to the first half of the twentieth century and reflect a broad range of architectural styles, from period revival mansions to vernacular barns, tank houses, and weathered storage sheds. Built and landscape elements that convey an association with this agricultural history include: tank houses to address the lack of irrigation prior to the construction of the Monticello Dam; clusters or groves of fruit trees near the residences that were used for personal consumption; secondary residences to allow housing of workers; and assorted outbuildings to house livestock and hold grain harvests (ICF 2025, page 5-8 to 5-9).

Community Members

George H. Sharpe. George H. Sharpe was considered Vacaville's master builder, credited with the construction of a large number of late-Victorian era residential, educational, religious, and civic buildings in the Vacaville area during the late-nineteenth and early-twentieth centuries. Vacaville similarly employed and titled Frank Steiger as the "town engineer," who designed bridges and civic buildings in the early-twentieth century, like the Ulatis Bridge and the old town hall (since demolished). Sharpe constructed multiple large houses along Buck Avenue, which continues Vacaville's Main Street westward, for affluent businesspeople of Vacaville, particularly

those owning or financially benefiting from nearby ranches, orchards, and the general business of fruit growth and distribution (ICF 2025, page 5-9).

Remaining examples of Sharpe's late Victorian-era residential construction include 201, 212, 225, and 301 Bucke Avenue. In 1896, Sharpe built a Colonial Revival-style house for himself at 306 Buck Avenue, which he then sold to W.E. Lawrence of Schroeder and Lawrence Hardware in 1900s. The property changed ownership to notable local Vacaville merchants and businesspeople over the next few decades (ICF 2025, page 5-9).

Sharpe's notable institutional buildings include the Vacaville High School of 1898 and the Ulatis Grammar School of 1908. Sharpe also constructed a new Christian Church (also referred to as the Community United Church) in 1891, though he purchased and dismantled the building in the 1930s to reuse the redwood lumber for residential constructions in the area. Sharpe also constructed the Greek Revival-style Carnegie Library in 1914–1915, after resigning from his position as a Vacaville Public Library trustee to avoid a conflict of interest. Despite the resignation of his position to bid on the library construction, Sharpe remained engaged in civic affairs throughout his life and was elected as the mayor of Vacaville from 1916 to 1918. The diversity in architectural styles of Sharpe's civic constructions of the late-nineteenth and early-twentieth centuries underscores the range of contracts and project types awarded to him throughout his career as a builder (ICF 2025, page 5-9).

Kilkenny Family of Solano County. Numerous members of the Kilkenny family lived in Solano County in the late-nineteenth to mid-twentieth centuries, including the Vacaville, Elmira, Suisun, Vallejo, and Dixon areas. Anthony Kilkenny of Stockton, California, purchased two large plots of undeveloped land in Solano County in 1875 and 1881, becoming one of the earliest Kilkenny land acquisitions of the county (ICF 2025, page 5-9 to 5-10). Between 1890 and 1915, though, multiple other members of the family purchased or inherited land across the Vacaville-Elmira-Dixon region. Some Kilkenny-owned plots of agricultural land in Solano County included single-family residences, while others were cultivated or leased to the government or private owners for agricultural purposes. For example, the Kilkenny brothers of the late-nineteenth century bought a threshing outfit from Loomis & Losee, local grain farmers, and thus, were likely involved in grain production and storage, which was an area of agricultural growth in the 1880s, 1890s, and 1900s in California Pacific Railroad (later the Southern Pacific Railroad's mainline) hub towns between Davis and Suisun. Additionally, following Catherine Kilkenny's death (wife of Anthony) in 1921, the executors of her estate—sons Thomas A. Kilkenny and James J. Kilkenny, and local landowners in their own right—petitioned the court of distribution and final discharge of Catherine's total estate value, which included $25,617.98 for rents, interest on notes and other dividends, and cash in bank to total $38,025.65 (Vacaville Reporter 1922, page 4). Catherine's estate included the property at 5310 Kilkenny Road, which she and Anthony owned from land acquisition in 1875 and residential construction ca. 1900 until her death in 1921.

Members of the Kilkenny family retained ownership of the property until 1969–1970 (ICF 2025, page 5-9 to 5-10).

Thomas A. and James J. owned plots of a development tract near Catherine's land northeast of Vacaville, as well as agricultural land that they farmed, sold, and leased for agricultural purposes throughout the early-to-mid-twentieth century. For example, Thomas A. retained 100 acres and leased back one-half of the acreage for one year for "grazing purposes" of a 1,400-acre ranch property near Vacaville in 1929. Thomas A., in particular, was also involved with local farming organizations. In his lifetime, Thomas A. served as president of the Solano County Farm Bureau and organized and served as a member of the board of directors of the California Farm Bureau Federation. He also served as a chairman of the NRA committee in Solano County at the time of his death in 1934. Thomas A. had six children and five brothers, four of whom also lived in Solano County and maintained land and participated in local civic engagement. One brother, Don L., served as mayor of Dixon, and another, Tobias D., served as city engineer for Vallejo (ICF 2025, page 5-10).

The following generations of Kilkenny's similarly leased and sold agricultural land and were engaged citizens. T. A. Kilkenny (the son of Thomas A.) leased one of his 360-acre estates in Dixon to the government for the planting of guayule for rubber in the 1940s; J. L. Kilkenny, likely a sibling or cousin, did the same with his 160 acres in Dixon. Multiple members of the Kilkenny family were active members of the Catholic community in Vacaville, and engaged in local educational pursuits, attending the local high school as students, teachers, and sports referees over multiple generations (ICF 2025, page 5-10).

Water Conveyance in Solano County

Like other areas of the northern Sacramento Valley with wet but sporadic rainy seasons, American settlers in Solano County primarily practiced wheat cultivation and livestock raising into the late-nineteenth century. Smaller-scale orchards, subsisting on annual rainfall and exploitation of groundwater, were the first agricultural industry to develop with the 1868 arrival of the railroad that expanded potential markets. The 1887 Wright Act sparked the first legal interest in larger-scale water districts across California, primarily centered on the San Joaquin Valley. Most successful districts appear after 1915 within the broader context of Progressive politics, government management of common good public resources, and population growth across the Central Valley ICF 2025, page 5-10 to 5-11).

Solano County agriculturalists primarily exploited groundwater resources into the early-twentieth century. Early efforts at irrigation districts include the Suisun Irrigation District (1916) and the East Dixon Irrigation District (c. 1923), which later became Reclamation District #2068 after proponents learned state law required the directors of an irrigation district be residents of the district (ICF 2025, page 5-11).

In 1940, the Solano County Board of Supervisors appointed community members to the Solano Water Council to promote water development and study local water needs. The Solano Water Council's primary issues included addressing increased salinity in the county's sloughs due to reduced water flow caused in part by construction of the Shasta Dam and reconciling competing Solano County initiatives (including the Bureau of Reclamation's proposed Solano Project) and inter-county conflicts over fair distribution of water resulting from proposed multi-county cooperative water projects. In the end, the Solano Water Council's studies recommended the County focus on the prospects of the Bureau of Reclamation's Solano Project, whose planning and construction ramped up in earnest following World War II (ICF 2025, page 5-11).

Solano Irrigation District and the Solano County Water Agency. In 1948, Solano Board of Supervisors passed a resolution forming the Solano Irrigation District (SID) to begin enacting the Solano Water Council studies' recommendations earlier in the decade. The Solano County Board of Supervisors also charged the SID with advocating for the Bureau of Reclamation's proposed Solano Project and securing water from that project for Solano County (ICF 2025, page 5-11).

To advocate for the Solano Project, SID needed to foster cooperation among and between landowners across Solano County. Many were opposed to joining the SID for fear of prohibitive costs and an inability to recoup the costs on parcels with substandard agricultural potential (such as pasturelands). Many of the parcels now between Dixon and Elmira were determined "good for irrigation," and included in the SID from its early formation (ICF 2025, page 5-11).

To avoid the SID taking on the role of water wholesaler and the Bureau of Reclamation from negotiating with a number of individual member units of the SID, Solano County supervisors requested the legislature create the Solano County Flood Control and Water Conservation District, present-day Solano County Water Agency (SCWA), and an independent entity to act as the County's water wholesaler and master contractor for its member agencies. Founded in 1951, SCWA's authority covers two primary areas, flood control and water supply (ICF 2025, page 5-12).

Solano Project

Principal features of the Solano Project include Monticello Dam, Lake Berryessa, Putah Diversion Dam, Putah South Canal, Terminal Dam and Reservoir, Green Valley Conduit, which feed into the locally administered distribution and drainage systems, such as the $15 million distribution drainage system erected by the SID (ICF 2025, page 5-13).

To distribute water derived from the Solano Project, the SID acquired 350 miles of rights of way for its water distribution system and erected the project between 1958 and 1962. Served by the Putah South Canal at 58 diversion points, the distribution system consists of 165 miles of major pipelines and 120 miles of canals spread across the county. This distribution system is supplemented by 60 miles of drainage facilities that include unlined open channels on private agricultural properties, used for irrigation

and storm water runoff. The Solano Project and its composite features transformed Solano County agriculture, and upon completion resulted in an estimated $10–$15 million in private capital investment by Solano County farmers for land leveling, tractors, and other equipment needed to intensify row-crop farming (ICF 2025, page 5-12 to 5-13).

From Soil Conservation Service to Natural Resources Conservation Service. The Natural Resources Conservation Service (NRCS) arose as the Soil Conservation Service via Congress's 1935 Public Law 74-46. In 1935 the Soil Conservation Service's (SCS) regional programs, centered along the East Coast and in the Midwest, expanded nationwide with assistance from the Civilian Conservation Corps, the Civil Works Administration, and the Works Progress Administration.

Under the authority of the Flood Control Act of 1936, the NRCS performed regional flood surveys and flood control plans for selected watersheds. With the United States Department of Agriculture's (USDA's) 1938 land management program reorganization, the NRCS became responsible for administering the Department's drainage and irrigation assistance programs, snow surveys, water supply forecasting program, and the Water Facilities, Land Utilization, and Farm Forestry programs. Together, it made the NRCS the USDA's lead private lands conservation agency (ICF 2025, page 5-13).

Ulatis Project

Erected between 1962–1972 by the SCS, present-day NRCS, a division of the USDA, the Ulatis Project consists of 43.5 miles of widened, deepened, straightened, and realigned stream channels among privately held lowland agricultural and grazing lands east of Vacaville and south of Dixon in the vicinity of the project study area. The purpose of the Ulatis Project was to alleviate flooding among agricultural lands downstream of Vacaville from 10-year storm flooding within the 150-square-mile Ulatis Creek basin. After construction, operations and maintenance of the Ulatis Project fell to SCWA (ICF 2025, page 5-14).

Within the Project area, Gibson Canyon Creek at Byrnes Road is one of the Ulatis Project's major creeks. Others include the Ulatis Creek and its flood control channel, New Alamon Creek Flood Control Channel, Horse Creek, Sweeney Creek, and McCune Creek (ICF 2025, page 5-14).

Transportation

Solano County Roadway Development. Solano County roads took shape during the late-nineteenth and early-twentieth centuries in response to local agricultural needs and railroad development. Early roads were unpaved and thus suffered from poor conditions, including dust in the summer and mud in the winter. In the late nineteenth century, local communities came together to improve road conditions. Despite these efforts, the system of roads in Solano County trailed behind other sections of California, due primarily to a shortage of funds (ICF 2025, page 5-14).

During the last decades of the nineteenth century, county roads served as a secondary means of travel in Solano County; while trains, the most direct form of transportation, remained the primary and preferred form. Whereas railroad companies purchased land to align straight, direct lines between population centers, county roads were aligned in a grid pattern, wrapping around the square-mile or half-square-mile United States Geological Survey sections that initially defined properties. These early roads mainly ran east–west or north–south. Hundreds of these unpaved roads peppered the Solano County landscape. These roads remained unpaved and secondary to the railroad throughout the nineteenth century (ICF 2025, page 5-14 to 5-15).

In the early-twentieth century, the Solano County Board of Supervisors struggled to solve the area's road problems, eventually seeking assistance from the United States Bureau of Public Roads. By 1928, several miles of paved highway existed in Solano County. However, these made up just over 8 percent of all the county's roads, and the remaining 92 percent remained unpaved, with soft surfaces of gravel, dirt, or gravel-dirt combination. The County subsequently developed a county-wide plan to continue paving and improving roads, adopting the State Highway's construction methods and opting for concrete construction (ICF 2025, page 5-15).

Most Solano County roads remained sparsely traveled, and mainly by people who lived near them, throughout the first half of the twentieth century. A 1934 survey of traffic flow within Solano County recorded that none of the county roads within the Project area had measurable daily traffic at that time. The county road nearest to the Project area with slightly heavier traffic flow was Lewis Road, situated east of the Project area. (ICF 2025, page 5-15).

Interstate 80. Before its designation as US-40 in 1926, the main early-twentieth century automobile travel corridor between the San Francisco Bay Area and Sacramento was part of the Lincoln Highway, the first transcontinental highway in the United States. Although automobile enthusiasts officially conceived of the Lincoln Highway in 1912, a portion of the route's alignment through Vacaville appeared on county maps as early as 1878 (ICF 2025, page 5-16).

In 1926, the Lincoln Highway's route transitioned into the newly designated US-40 as part of the federal effort to standardize and improve the nation's highway network. US-40 carried forward the legacy of the Lincoln Highway, providing a critical link between Solano County's agricultural communities and major urban centers like Sacramento and San Francisco. Between 1917 and 1936, the route extended from Vacaville northwest toward Dixon, making several turns and angle changes. Farmers relied on this highway to transport produce and goods to urban markets efficiently. Roadside businesses also flourished, catering to travelers and boosting the local economy. The Nut Tree in Vacaville, founded in 1921, gained national fame for its innovative blend of dining, shopping, and entertainment (ICF 2025, page 5-16).

The mid-twentieth century brought significant changes with the development of the Interstate Highway System. The Federal-Aid Highway Act of 1956 prioritized the

construction of modern highways to support postwar economic growth, improve safety, and reduce travel times. Interstate 80 (I-80) replaced US-40 along this corridor, incorporating features such as controlled access, wider lanes, and advanced interchanges to support higher-speed travel. Construction of I-80 through Vacaville and Dixon began in the late 1950s and proceeded in phases, with the full conversion to I-80 completed by the late 1960s. The old alignment of US-40 largely paralleled today's I-80, with remnants still visible as frontage roads and local streets (ICF 2025, page 5-16).

Energy Infrastructure

Pit Hydroelectric Project and Pit River Developments. By the 1910s, PG&E had integrated holdings inherited at formation and embarked on ambitious development schemes. The company continued to purchase smaller entities to both increase market share and network potential. Although this continuous growth ensured the company's position as Northern California's preeminent utility, PG&E faced intense competition and limitations to growth, with the southern wall of San Joaquin Light and Power Company and the intermixed trunk service corridor of Great Western Power Company creating a limiting framework that preoccupied company officials and financial backers. (ICF 2025, page 5-17).

By 1920, the population of the PG&E service area was more than 1.8 million, or more than half of the population of the state. Additionally, because of extensive advertising regarding the merits of electricity and an increasing array of domestic, commercial, and industrial electrical products, adoption and consumption rates had skyrocketed. In 1920, 83 percent of California households were wired for electricity, compared with a far lower national average of 35 percent. Similarly, although the country only consumed 372 kilowatts (kW) hours per capita annually, Californians on average consumed 1,085 kW hours. Within this broadening consumer context, the utility found the energy shortage particularly acute (ICF 2025, page 5-17).

Within this context of demand and scarcity, PG&E embarked on its second major hydroelectric project, constructing a series of powerhouses on the Pit River, located more than 200 miles from the Bay Area in Northern California's rugged Shasta County. The project was groundbreaking in scale and design, with the initial generation output of 69 megawatts and transmission voltage of 220 kilovolt (kV) serving as operational milestones in hydroelectric development (ICF 2025, page 5-17).

The Pit River had long been considered an ideal location for generation, with engineers surveying the river's potential in the early days of hydroelectric growth. However, the site's remote Cascade Mountains location had long precluded development in the early years of hydroelectric engineering, with hundreds of miles separating the river from population centers forming a technical and economic barrier. Beginning in 1909, several companies had initiated hydroelectric schemes on the Pit River to no avail, with Mount Shasta Power Company and Northern California Power Company each initiating plans only to have them collapse in the face of the site's remote nature. By the mid-1910s, PG&E engineers, led by Chief Engineer Frank Baum, eyed the river as an ideal site for

extensive large-scale, multi-phased power. Based on this theory of expansive phased construction, PG&E purchased the necessary holdings and water rights of Mount Shasta Power Company in 1917 and secured those of the Northern California Power Company in 1919 (ICF 2025, page 5-18).

The complexity and remote nature of the proposed system allowed PG&E to test many of the most advanced theories in hydroelectric generation and transmission. The first powerhouse completed was Pit No. 1, located at the head of the Pit River canyon below Fall River Mills. As designed, the plant had an installed capacity of 69,000 kW, the largest of the PG&E system at the time. The architecture of the powerhouse and its associated system components mirrored the advanced engineering, with an architectural treatment that was conceived and designed by PG&E Lead Architect Ivan C. Frickstad to convey the aspirations of PG&E as a dominant civic force in California social and economic life (ICF 2025, page 5-18).

The 220-kV transmission line that connected the Pit Project to the associated Vaca-Dixon Substation, which is within the project study area, represented the most advanced transmission design during the period, running at the highest commercial voltage developed to date and one of the longest distances (202 miles). This voltage standard remained the high-voltage technological standard through the 1960s until the development of 500 kV transmission capabilities. (ICF 2025, page 5-18).

Energy's Amazing High Road: 500-kV Transmission. PG&E continued to diversify its energy supplies with more powerful hydroelectric and gas plants and newly developed geothermal and nuclear supplies. The company developed the first major advance in transmission technology since the incorporation of 220 kV in the 1920s. In the early 1960s, PG&E announced a plan to construct a line of not less than 500,000 volts from Shasta County to Southern California. The announcement was significant in two respects. First, 500-kV electrical transmission, termed Extra High Voltage, more than doubled the transmission capability utilized to date, representing a great stride in transmission efficiency. Second, the announcement was indicative of increased electrical interconnection, with the 500-kV line developed as part of a collaborative effort that included utilities in the Pacific Northwest as well as Southern California's major utilities (ICF 2025, page 5-20).

Initial construction began in 1962. By 1968, PG&E had completed the company's 500-kV transmission backbone, with a transmission corridor extending from Northern California to an interconnection with Southern California Edison at Midway Substation in Kern County. Construction involved 1,025 miles of transmission corridor as well as substantial upgrades to the company's existing substation network including the Vaca-Dixon Substation within the project study area (ICF 2025, page 5-20).

Architecture

The following text highlights building types and styles found within the built environment study area.

Light-Industrial Buildings. American light-industrial architecture is commonly single story with a large, rectangular plan. While offices are sometimes located in a detached building, light-industrial factories often feature an office block that is attached, and sometimes more than one story. Typically located on the shorter side of the building's rectangular plan, the front of the office is often oriented toward the main approach road with the rear providing direct access to the factory production area. If present, entrance lobbies are typically located in this area. While this building type is typically utilitarian in style. Architectural detail, if present, is usually concentrated at the main entrance (ICF 2025, page 5-21).

Many light-industrial buildings have rhythmically spaced, periodic window bays. In many of the smaller-scale postwar variants, these windows were commonly multilight metal frame with an operable awning or hopper window set within it to allow for ventilation. Many factories and light-industrial buildings are parsed into three parts: process line, production area, and storage areas. In early factories and light-industrial buildings, the conveyor would connect the three separate portions in the most efficient manner possible. Rollers, forklifts, and, for larger-scale buildings, gantry and other cranes were also used to efficiently transport materials (ICF 2025, page 5-22).

Arguably more than any other building type, the time and thought of planning industrial architecture is front-loaded compared to the rapidity with which the building was to be completed; lost time meant lost productivity and profit. The approach mastered by Albert Kahn of assembling a consortium of engineering and factory design experts became common in the mass production era of the 1920s and gained even more momentum after World War II, when architectural firms hired these experts as in-house staff. This is seen as a distinctly North American approach, and such firms designed numerous if not most postwar American factories and other industrial buildings (ICF 2025, page 5-22).

Residential. Residential architectural styles found throughout the built environment study area include but are not limited to the following.

Queen Anne

Queen Anne Victorian architecture arose out of London's architecture community in the 1870s as a style that could be applied to residential buildings, as well as institutional architecture. In the United States, Queen Anne style is a variegated and highly eclectic design system commonly perceived as the culmination of American Victorian architecture (ICF 2025, page 5-22).

Akin to other late-nineteenth-century architecture designs in America, the advent of the Queen Anne style was made possible by the development of balloon-frame construction and the westward spread of the railroads. Victorian architecture, the Queen Anne style included, featured a complexity of massing and roof-type. This complexity was facilitated by using standardized, machine-made parts. As the design system spread with the railroads, so too did the same pattern books, and inexpensive, machine-cut,

ornamental parts that largely defined the style. While the Queen Anne style became highly standardized and consistent across the country, “California and the resurgent, cotton-rich states of the New South have some of the most fanciful examples” (Howe 2002, page 242–243; McAlester 2015,page 345–350, 370). The Queen Anne style employed bays, towners, overhangs, and wall projections to avoid plain, flat walls, and also used material combinations to create texture on wall planes (ICF 2025, page 5-22 to 5-23).

Like other versions of Victorian architecture, the Queen Anne style takes its general character-defining features—variegated massing, organic references in the ornament, surface as decorative element, and an emphasis on verticality—from the Gothic and High Victorian Gothic revivals. Queen Anne residences are categorized into two major subtypes; those distinguished by shape and those distinguished by decorative detail. Shape subtypes include hipped roof with lower cross gables, cross gable, front gable, and townhouse. Decorative detailing subtypes include spindlework, which are most abundant, and feature machine/lathe turned porch supports and spindlework ornamentation. The Free Classic substyle, which features classical columns and pediments, Palladian windows, and dentil molding; half-timbered, which featured decorative half-timbering in gables or upper-story walls; and patterned masonry, which feature patterned brickwork or stonework, and inset decorative panels of stone or terracotta. Free Classic version of the Queen Anne style foreshadowed the features of Colonial Eclectic revival architecture that supplanted Queen Anne as the most common residential vernacular style in the first decade of the twentieth century (ICF 2025, page 5-23).

Vernacular-National Style

Agricultural and otherwise rural properties in the region frequently contain vernacular residences. Architectural historians often identify such residences as examples of the National style, a broad category of vernacular dwellings encompassing a wide range of folk residential construction from the late-nineteenth century through the 1920s and 1930s. The spread of the National style reflected the circulation of mass-produced building materials such as pre-cut lumber shipped by railroads, as well as the related proliferation of balloon framing for residential construction. The types of homes classified as National style generally lack the decorative embellishment that distinguishes much of the domestic architecture of the Victorian era. They also lack many character-defining features of early-twentieth century Craftsman or Period Revival domestic architecture. Character-defining features of the National-style vernacular include one or two-story heights with simple floor plans; medium-pitched gabled or pyramidal roofs with minimal eave overhangs; symmetrically arranged doors and windows; shiplap or other wood cladding, and an absence of masonry; and porches sheltered by eave extensions or awnings with simple squared wood columns as

opposed to the heftier battered columns typical of Craftsman bungalow porches (ICF 2025, page 5-23).

Over time, vernacular rural residences in the region incorporated features associated with modest Craftsman-style homes. As a result, pre–World War II single-family vernacular residences within the study area and across the region incorporate features such as exposed rafter tails, knee-brace porch shelter supports, and louvered wood gable-end vents. Some also have lower pitched roofs compared to the moderately pitched roofs typical of National-style residences (ICF 2025, page 5-23).

Ranch Style

The Ranch style gained popularity after World War II, although architects and builders had developed the style in the early 1930s. The Federal Housing Administration financed mortgage insurance for small residential plans, including modest examples of the Ranch style that lacked the low, horizontal, and sometimes sprawling massing that became popular in the 1950s and continued into the 1960s. The design of the Ranch house was derived from a combination of earlier residential styles in the Southwest as a stylistic progression beyond Minimal Traditional or Postwar Minimal dwelling styles. Ranch houses were typically rapidly constructed, minimally appointed tract homes that met much of California's immediate postwar housing needs with attached garages that met the demands associated with the increasing role of the automobile in domestic life since homes were also built beyond the limits of transit lines. Ranch-style residences featured little of the architectural ornamentation that often evoked the older, more traditional residential architecture. Homeowners and tract developers employed the style across the United States. The style remained popular until the early to mid-1970s (ICF 2025, page 5-23 to 5-24).

Character-defining features of the Ranch style include: low and horizontal massing; L-plan or sometimes U, H, or I shaped; medium-or low-pitched gable or hip roof with medium to deep eaves; prominent attached garage or carport; recessed entrance. More elaborate examples may have double doors, side lights, or a breezeway between house and garage; small, modest porch; multiple types of cladding materials, such as stucco, board-and-batten siding, brick, and stone; large picture or tri-partite window; low, horizontal built-in planters; minimal architectural detailing except for specific substyle character-defining features which include variety of substyles. The substyles include Asian-influenced, Contemporary, Rustic, Storybook, and sweeping-roof substyles (ICF 2025, page 5-24).

Regulatory

Federal

Section 106 of the National Historic Preservation Act. No federal permits are required, the project is not on federal lands, and the project would not receive federal funds. Therefore, this law does not apply. However, the applicant's qualified consultant evaluation of all cultural resources identified in the project area of analysis (PAA)

includes language referencing the National Register of Historic Places (NRHP), so the following discussion of NRHP guidelines is provided below as a means of clarifying consultant provided text.

National Register of Historic Places (NRHP), 1966. The NRHP is "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment" (Code Fed. Regs., title 36, Part 60.2). Eligibility for inclusion in the NRHP is determined by applying the following criteria, which were developed by the National Park Service in accordance with the NHPA as outlined in Code of Federal Regulations, title 36, Part 60.4:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that meet one or more of the following criteria:

A. Are associated with events that have made a significant contribution to the broad patterns of our history.

B. Are associated with the lives of persons significant in our past.

C. Embody distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.

D. Have yielded, or may be likely to yield, information important in prehistory or history.

Any prehistoric or historic period district, site, building, structure, or object that meets one or more of the criteria above and possesses sufficient integrity may be eligible for inclusion in the NRHP as a historic property. The NRHP defines integrity through the evaluation of seven aspects or qualities of a resource, including: feeling, association, workmanship, location, design, setting, and materials. The NRHP defines these as:

- Feeling: a property's expression of the aesthetic or historic sense of a particular period of time
- Association: the direct link between an important historic event or person and a historic property
- Workmanship: the physical evidence of the crafts of a particular culture, people, or individual during any given period in history or prehistory
- Location: the place where the historic property was constructed or the place where the historic event occurred
- Design: a combination of elements that create the form, plan, space, structure, and style of a property
- Setting: the physical environment of a historic property

- Materials: the physical construction elements that were combined or deposited during a particular period of time and in a particular pattern or configuration to form a historic property

State

California Register of Historical Resources (Public Resources Code, § 5024.1). A historical resource is defined as a "resource listed in, or determined to be eligible by the State Historical Resources Commission, for listing in the California Register of Historical Resources," or "a resource included in a local register of historical resources, as defined in section 5020.1(k) of the Public Resources Code or identified as significant in an historical resource survey meeting the requirements of Section 5024.1(g) of the Public Resources Code," or "any object, building, structure, site, area, place, record, or manuscript which a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the agency's determination is supported by substantial evidence in light of the whole record." (California Code Regulations, title 14, § 15064.5[a].) Historical resources that are automatically listed in the California Register of Historical Resources (CRHR) include California historical resources listed in or formally determined eligible for the National Register of Historic Places NRHP and California Registered Historical Landmarks from No. 770 onward (Public Resources Code, § 5024.1(d)).

- Under the CRHR, a resource is generally considered historically significant if, in addition to being at least 50 years old, it also meets one or more of the following four criteria (Public Resources Code, § 5024.1):
    1. It is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
    2. It is associated with the lives of persons important to our past.
    3. It embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
    4. It has yielded, or may be likely to yield, information important in prehistory or history.

California Environmental Quality Act (Public Resources Code, § 21084.1). The California Environmental Quality Act (CEQA) requires lead agencies to determine if a project could have a significant impact on historical or unique archaeological resources. The CEQA establishes that an impact that results in a substantial adverse change in the significance of a historical resource is considered a significant impact on the environment. A substantial adverse change could result from physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the historical resource would be materially impaired (California Code Regulations, title 14, § 15064.5 (b)(1)). Material impairment is defined as demolition or alteration in an adverse manner [of] those characteristics of a historical

resource that convey its historical significance and that justify its inclusion in, or eligibility for inclusion in, the CRHR or a local register (California Code Regulations, title 14, § 15064.5(b)(2)(A)).

In 2014, CEQA was expanded to include the category tribal cultural resource. A project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment (Public Resources Code, § 21084.2). It further states the CEQA lead agency shall, when feasible, avoid damaging effects to any tribal cultural resource (Public Resources Code, § 21084.3).

Unique Archaeological Resources (Public Resources Code, § 21083.2). If an archaeological resource does not qualify as a historical resource, it may meet the definition of a "unique archaeological resource." The Public Resources Code, section 21083.2(g) defines a unique archaeological resource as an artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

1. contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
2. has a special and particular quality such as being the oldest of its type or the best available example of its type
3. is directly associated with a scientifically recognized important prehistoric or historic event or person

Health and Safety Code, Section 7050.5. In the event of the discovery of human remains outside of the context of a formal cemetery, the California Health and Safety Code, section 7050.5 requires that construction be halted and that the coroner be notified. This code requires the coroner to notify the Native American Heritage Commission (NAHC) if remains are determined to be Native American in origin.

Public Resources Code, Section 5097.98. In the event human remains are discovered, the Public Resources Code, section 5097.98 authorizes the NAHC to assign a Most Likely Descendant (MLD). This code requires that the landowner ensure the discovery is not further damaged and the MLD then may, with the landowner's permission, inspect the find and make recommendations for the culturally appropriate treatment or disposition of the human remains and any associated grave goods. The landowner shall confer with the MLD all reasonable options regarding the MLD's preferences for treatment. Where the parties are unable to agree on the appropriate

treatment measures, the Native American human remains and associated items shall be reinterred on the property with appropriate dignity.

Additional Considerations

In addition, historical resources must also possess integrity of location, design, setting, materials, workmanship, feeling, and association (California Code Regulations, title 14, § 4852(c)).

Even if a resource is not listed or determined to be eligible for listing in the CRHR, CEQA requires the lead agency to decide whether the resource is a historical resource as defined in the Public Resources Code, sections 5020.1(j) or 5024.1.

To determine whether a proposed project may have a significant effect on the environment, staff analyze the proposed project's potential to cause a substantial adverse change in the significance of historical or unique archaeological resources. The magnitude of an impact depends on:

- the affected historical resource(s);
- the specific historic significances of any potentially impacted historical resource(s);
- how the historical resource(s) significance is manifested physically and perceptually;
- appraisals of those aspects of any historical resource's integrity that figure importantly in the manifestation of the resource's historical significance; and
- how much the impact will change historical resource integrity appraisals.

California Code of Regulations, title 14, section 15064.5(b) defines a "substantial adverse change" as the "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired."

Local

Solano County General Plan. The Solano County General Plan (Solano County 2008, Chapter 4 Resources, RS-3, RS-41 to RS-46), includes the following policies that pertain to cultural and tribal cultural resources:

- **Policy RS.P-38:** Identify and preserve important prehistoric and historic structures, features, and communities.
- **Policy RS.P-40:** Consult with Native American governments to identify and consider Native American cultural places in land use planning.

Chapter 4 of the General Plan also includes implementation program RS.I-25, which requires cultural resources inventories of all new development projects in areas identified with medium or high potential for archeological or cultural resources. Where a preliminary site survey finds medium to high potential for substantial archaeological

remains, the County shall require a mitigation plan to protect the resource before issuance of permits. RS.I-25 states that mitigation may include:

- "Having a qualified archaeologist present during initial grading or trenching (monitoring);
- Redesign of the project to avoid archaeological resources (this is considered the strongest tool for preserving archaeological resources);
- Capping the site with a layer of fill; and/or [sic]
- Excavation and removal of the archaeological resources and curation in an appropriate facility under the direction of a qualified archaeologist.
- Alert applicants for permits within early settlement areas to the potential sensitivity. If significant archaeological resources are discovered during construction or grading activities, such activities shall cease in the immediate area of the find until a qualified archaeologist can determine the significance of the resource and recommend alternative mitigation." (TT 2024c, page 4.5-41).

City of Vacaville General Plan. The Vacaville General Plan Chapter 4, Conservation and Open Space Element, includes the following cultural resources goal and policies applicable to the project (City of Vacaville 2015, Chapter 4, COS-20 to COS). Goal COS-6: Protect and enhance cultural resources for their aesthetic, scientific, educational, and cultural values.

- **Policy COS-P6.2:** Require that a records search of the California Historical Resources Information System be conducted and reviewed by a cultural resources professional for proposed development areas to determine whether the site contains known prehistoric or historic cultural resources and the potential for as-yet-undiscovered cultural resources.
- **Policy COS-P6.4:** Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.
- **Policy COS-P6.5:** Require that any archaeological or paleontological resources on a development project site be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure, unless the City identifies superior mitigation. If resources are documented, coordinate with descendants and/or stakeholder groups, as warranted.
- **Policy COS-P6.6:** Treat human remains discovered during implementation of public and private projects within the city with respect and dignity. (TT 2024c, page 4.5-42).

Cumulative

Cumulative projects are identified as past, current, or reasonably foreseeable future projects that, when viewed in connection with the proposed project, cause its effect(s) on cultural and tribal cultural resources to be potentially significant. The cumulative project setting for cultural and tribal cultural resources includes all projects relative to the proposed project in **Appendix A, Table A-1** and **Figure A-1**.

5.4.2 Environmental Impacts

This section describes the environmental setting and discusses the impacts associated with the construction and operation of the proposed project with respect to cultural and tribal cultural resources. These impacts are summarized as follows.

CULTURAL AND TRIBAL CULTURAL RESOURCES	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the proposed project cause a substantial adverse change in the significance of a historical resource pursuant to Public Resources Code, section 15064.5?	☐	☒	☐	☐
b. Would the proposed project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Public Resources Code, section 15064.5?	☐	☒	☐	☐
c. Would the proposed project disturb any human remains, including those interred outside of dedicated cemeteries?	☐	☒	☐	☐
d. Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, section 5020.1(k), or	☐	☐	☐	☒
ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to	☐	☒	☐	☐

CULTURAL AND TRIBAL CULTURAL RESOURCES	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code, section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.				

Environmental checklist established by California Code Regulations, title 14, Div. 6, Ch. 3, Appendix G, cultural resources and tribal cultural resources.

5.4.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, the following methodology and thresholds of significance are used to evaluate the project.

Methodology

Literature Review and Record Search

On behalf of the applicant, ICF conducted three cultural resource record searches for the project, at the Northwest Information Center (NWIC) of the California Historical Resources Information System to identify previous cultural resources studies and records. The NWIC, an affiliate of the Office of Historic Preservation, is the official state repository of cultural resource records and reports for Solano County. The records search compiled the following bibliographic references, previous survey reports, historic maps, and cultural resources site records pertinent to the project to identify prior cultural resource studies and known cultural resources within 1 mile of the project Study Area. The record searches also included consultation of the following sources (ICF 2025, page 6-1).

- National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR)
- California Office of Historic Preservation Historic Property Directory (2010)
- California Inventory of Historic Resources (1976)
- California State Historic Landmarks (1996)
- California Points of Historical Interest (1992)
- Historic properties reference map
- Native American Heritage Commission's (NAHC) Sacred Lands File Search

The initial cultural resource record search was conducted under the direction of a Secretary of the Interior (SOI)-qualified ICF archaeologist on May 22, 2023, to identify any previous cultural resource studies and previously recorded cultural resources within 0.25 mile of the project (also referred to as the record search radius), and to assess the potential for unidentified cultural resources in the project study areas. Following CEC guidelines, a second record search was performed under the direction of an SOI-qualified ICF archaeologist, on May 15, 2024, to identify any previously recorded cultural resources and cultural resource studies within a 1-mile radius of the project. A keyword record search, using resource names, was requested by an SOI-qualified architectural historian on February 4, 2025, to identify linear resources that may have been evaluated outside of the study area (ICF 2025, page 6-1 to 6-2).

The effort to identify cultural resources in the study area for the project also included a review of the archaeological, ethnographic, and historical literature; records search at the NWIC at Sonoma State University; examination of historic maps and photographs; historical research, consultation with NAHC, subsurface sensitivity analysis, field surveys, and built environment assessment. Each of these methods and their results are described below. The following resources were reviewed (ICF 2025, page 6-2):

- General Land Office plat maps
- Nationwide Environmental Title Research website
- Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4 (Meyer and Rosenthal 2007)
- U.S. Geological Survey maps
- U.S. Department of Agriculture, Natural Resource Conservation Service soil survey data (USDA 2024)

Additional Research

In addition to the NWIC records search, the applicant's qualified consultant conducted additional in-depth research. On January 29 and 30, 2025, SOI-qualified architectural historians conducted in-person permit and property records research at the Solano County Assessor/Recorder's Office, Department of Resource Management, and the Solano County Historical Society. Researchers reviewed accessible building permits and deed records to establish chains of ownership, where possible, and document permitted alterations, additions, and modifications to existing historic age buildings on parcels within the Study Area (ICF 2025, page 6-4).

While developing historic contexts and property-specific histories for the CRHR evaluations of potential historical resources in the built environment Study Area, ICF architectural historians utilized the following resources and repositories:

- Solano County Assessor/Recorder's Office, Department of Resource Management
- Solano County Historical Society

- Vacaville Heritage Society's online archive (including issues of the Vacaville Reporter)
- HistoricAerials.com
- Historical Topo Map Explorer (https://livingatlas.arcgis.com/topomapexplorer/)
- United States Department of Agriculture Census of Agriculture Historical Archive (https://agcensus.library.cornell.edu/)

Based on the complete online archive of the local newspaper, the Vacaville Reporter, other newspaper sources, such as Historic Newspapers (https://www.historic-newspapers.com/) and Ancestry (https://www.ancestry.com/) were used only for preliminary research (ICF 2025, page 6-4).

Additionally, qualified consultant staff reviewed historical maps and historical aerial photographs to determine the presence of historic-period buildings and/or structures within the Project and in the general vicinity to assist in assessing the potential for historic-period archaeological deposits. The review of historic aerial photographs, General Land Office Plat maps, and United States Geological Survey Quadrangle maps did not identify any historical features or indications of cultural resources or land use in the project site. In the general vicinity of the project site, by 1917, there is a homestead present along Kilkenny Road, west of the project site and south of the proposed underground line. Between 1908 and 1917, there was a church at the corner of Weber Road and Lewis Road, 0.7 mile northeast of the project. By 1941, the Vaca-Dixon Substation is present. A few more homesteads are present north of the project site. By 1953, there are a few new structures and a well associated with the homestead west of the project site and there is a well associated with the homesteads north of the project site (ICF 2025, page 6-4).

Based on archival map and aerial photography research, it was determined that the project site has a low potential for containing intact historic-period archaeological deposits (ICF 2025, page 6-5).

Subsurface Sensitivity Analysis

The applicant's qualified consultant conducted additional research to address the sensitivity of the project site for buried archaeological sites. Research and review of pertinent geologic, soil survey, and geoarchaeological data included the following resources (ICF 2025, page 6-6).

- U.S. Department of Agriculture, Natural Resources Conservation Service Soil Survey Data (USDA 2024)
- Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4 (Meyer and Rosenthal 2007)
- Geology of Northern California (Bailey 1966)

The resources listed above provided background for the predictive modeling for the sensitivity of buried sites in the vicinity of the proposed project. The focus on the predictive modeling consisted of analyzing the soil survey data and soil classification types across the study area and cross referencing with the age of the landforms associated with the identified soils (ICF 2025, page 6-6).

Tribal Consultation

Applicant's Correspondence

On January 19, 2024, the applicant's qualified cultural resource consultant (ICF) requested a search of the NAHC Sacred Lands Files (SLF) for a review of the commission's SLF records regarding the project site. The NAHC provided a list of 12 Tribal contacts with the response. On May 30 and June 6, 2024, ICF sent outreach letters to each of the 12 tribal contacts, requesting assistance in our cultural resources identification efforts in identifying cultural resources, sacred lands, or other heritage sites within the project vicinity. ICF completed follow-up phone calls and emails on July 1, 2024 (ICF 2025, page 6-5). The 12 tribal contacts consulted are:

- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community – Wayne Mitchum Jr., Chairperson
- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community – Jennie Mitchum, Cultural Preservation Director
- Cortina Rancheria – Kletsel Dehe Band of Wintun Indians – Charlie Wright, Chairperson
- Guidiville Rancheria of California – Michael Derry, Historian
- Guidiville Rancheria of California – Bunny Tarin, Historian
- Wilton Rancheria – Cultural Preservation Department
- Wilton Rancheria – Dahlton Brown, Executive Director of Administration
- Wilton Rancheria – Herbert Griffin, Executive Director of Cultural Preservation
- Yocha Dehe Wintun Nation – James Kinter, Tribal Secretary
- Yocha Dehe Wintun Nation – Anthony Roberts, Chairperson
- Yocha Dehe Wintun Nation – Yvonne Perkins, THPO, Cultural Resources Chairperson
- Yocha Dehe Wintun Nation – Leland Kinter, Tribal Treasurer

CEC Consultation

The CEC staff, pursuant to their responsibilities under CEQA, contacted the NAHC to obtain an updated contact list and the NAHC responded on October 31, 2024.

Consultation letters were sent on October 22, 2025 (after the application was deemed complete), with follow-up e-mails sent on December 11, 2025, to the Cachil Dehe Band of Wintun Indians and the Yocha Dehe Wintun Nation. No e-mail addresses were

provided for the Grindstone Rancheria of Wintun-Wailaki or the Cortina Rancheria-Kletsel Dehe Band of Wintun Indians. Phone messages were left for the two tribes without e-mail addresses on December 12, 2025.

- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community – Wayne Mitchum Jr., Chairperson
- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community – Jennie Mitchum, Cultural Preservation Director
- Cortina Rancheria – Kletsel Dehe Band of Wintun Indians – Charlie Wright, Chairperson
- Grindstone Rancheria of Wintun-Wailaki, Ronald Kirk, Chairperson
- Yocha Dehe Wintun Nation – Anthony Roberts, Chairperson
- Yocha Dehe Wintun Nation – Yvonne Perkins, THPO, Cultural Resources Chairperson
- Yocha Dehe Wintun Nation – – Leland Kinter, Tribal Treasurer
- Yocha Dehe Wintun Nation – James Kinter, Tribal Secretary

Historical Society Outreach

The applicant's cultural resource consultant completed outreach to local historical societies on January 24, 2025, via email, with a follow-up email on February 6, 2025 (ICF 2025, page 6-7).

Archaeological Field Survey

Under the supervision of a Secretary of the Interior-qualified archaeologist, the applicant's qualified cultural resource consultant conducted three intensive pedestrian surveys of the archaeological project study area or PAA for archaeological resources. On June 7, 2023, archaeologists Jack Webb and Alessia Isolani conducted an intensive pedestrian survey of the study area to determine the presence of historic and archaeological cultural materials in the study area. The survey was conducted by walking 50-feet-wide, east–west and north–south-oriented transects to ensure optimal coverage of the archaeological study area. Because of impassable locked gates and high fencing at the PG&E Vaca-Dixon Substation, access to the westernmost portions of the alignment (approximately 275 feet) was impeded and, therefore, unable to be surveyed. All other sections of the archaeological study area were surveyed. On November 21, 2023, archaeologist Shelby Caulder conducted an intensive pedestrian survey of the archaeological study area where the gen-tie line was revised and needed additional survey. The survey was conducted by walking 50-feet-wide east–west-oriented and north–south-oriented transects to ensure optimal coverage of the updated study area. Survey areas within the PG&E Substation were not accessible. To comply with the CEC guidelines, a third survey of the study area was completed. On May 23 and 24, 2024, archaeologist Shelby Caulder conducted an intensive pedestrian survey of the gen-tie laydown area, gen-tie corridor, areas within the PG&E Vaca-Dixon Substation that were previously inaccessible, 50 feet on either side of the linear routes,

and the 200-foot buffer surrounding the project site. The survey was conducted by walking 33-to-50-feet-wide east–west-oriented and north–south-oriented transects. All accessible areas were surveyed. The survey portions within the transmission switchyard (PG&E Vaca-Dixon Substation) and survey areas intersecting Assessor Parcel Numbers (APNs) 0141-030-010, 0141-030-050, 0141-030-030, and 0141-010-080 were not surveyed due to inaccessibility. As a result of each survey, 145 acres were intensively surveyed, and 16.5 acres were not surveyed due to inaccessibility (ICF 2025, page 6-8).

The archaeological project study area varies, consisting of 40 acres of flat agricultural farmland and approximately 1 mile of alignment, which intersects dirt roads, plum orchards, I-80, and adjacent to the PG&E Vaca-Dixon Substation. Ground visibility also varied, from excellent (90–100%) in the graded sections of agricultural fields and the dirt roadway, to moderate (50–70%) in the plum orchards covered in light deadfall. Within the substation, ground visibility varied from poor (0–15%) in areas with overgrown vegetation, to excellent (80–100%) along gravel roads, within the substations and areas cleared of vegetation. Additionally, the 1-mile alignment crosses several unnamed agricultural aqueducts at both its northern and eastern edges (ICF 2025, page 6-8).

Historic Architectural

Built Environment Desktop Survey

To identify potential historical resources within the Built Environment study area or project area of analysis (PAA) for built environment resources, the applicant's SOI-qualified consultant architectural historians conducted a desktop survey to identify properties for field survey and CRHR evaluation (ICF 2025, page 6-6).

To complete the desktop survey, architectural historians identified built environment resources located within the 0.5-mile buffer around project features. If a parcel was within the 0.5-mile buffer, but the buildings and structures on that parcel fell outside the 0.5-mile buffer, then those resources were not included for survey and evaluation. After built environment resources were identified, the architectural historians reviewed the historic aerial photographs to determine if the resources were older than 45 years. Resources within the 0.5-mile buffer and older than 45 years old were identified for field survey and CRHR evaluation (ICF 2025, page 6-7).

Built Environment Field Survey

In addition to the built environment desktop survey, the applicant's consultant conducted a field survey. An architectural pedestrian survey within 0.5 miles of the project was conducted. On June 27, 2024, SOI-qualified architectural historians conducted an intensive pedestrian survey of the Study Area. The architectural historians drove the entire built environment PAA and took digital photos and notes from the public right-of-way. On January 29, 2025, SOI-qualified architectural historians conducted a second intensive pedestrian survey of the built environment PAA, taking digital photos and notes of linear water conveyance features and roadways within the

built environment study area or PAA for built environment resources (ICF 2025, page 6-9).

Results

Literature Review

The NWIC record search identified 37 previous cultural resource studies intersecting the project or within a 1-mile radius of the project site. Of the 37 cultural resource studies, 20 intersect the PAA (see **Table 5.4-1**). The NWIC record search identified six previously recorded cultural resources within a 1-mile radius of the project study area. Of the six previously recorded cultural resources, five are built environment resources and one is a pre-contact isolate. None of the previously recorded cultural resources intersect the project site. (ICF 2025, page 6-3). The record search identified one previously recorded archaeological isolate within 1 mile of the project site (11-ISO-12). This isolate is well outside of the project site and archaeological study area.

TABLE 5.4-1 PREVIOUS STUDIES CONDUCTED WITHIN 1 MILE OF THE PROJECT

Study Number	Author	Year	Title
S-000595	R. F. King	1974	A Report on the Status of Generally Available Data Regarding Archaeological, Ethnographic, and Historical Resources Within a Five-Mile-Wide Corridor Through Portions of Colusa, Yolo, Solano, and Contra Costa Counties, California
S-000848	David A. Fredrickson	1976	A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources
S-002661	Christian Gerike	1980	Tulucay S/S and Vaca-Dixon S/S to American Canyon Junction Study Corridor, Archaeological Sensitivity Map (letter report)
S-004991	Wirth Associates, Inc.	1980	Western Leg – Alaska Highway Pipeline Project: Cultural Resources, Volume II, Pacific Gas Transmission Company, Pacific Gas and Electric Company, Evaluation of Previously Recorded Archaeological Sites
S-005207	Brigham Arnold	1964	A Survey of Archeological Resources Along the Pacific Gas and Electric Company's Canadian Gas Line in California
S-007675	Dana McGowan Seldner	1985	A Preliminary Archeological Study of the Northeast Sector, Vacaville, Solano County, California
S-009462	Teresa Ann Miller	1977	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties
S-009795	Thomas Lynn Jackson	1986	Late Prehistoric Obsidian Exchange in Central California
S-012300	Michael J. Moratto et al.	1990	Final Cultural Resources Assessment Report, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California, Phase 1: Survey, Inventory, and Preliminary Evaluation of Cultural Resources

TABLE 5.4-1 PREVIOUS STUDIES CONDUCTED WITHIN 1 MILE OF THE PROJECT

Study Number	Author	Year	Title
S-017298	Michael J. Moratto et al.	1991	Archaeological Testing and Evaluation Report, 1990 Field Season, and Historic Properties Treatment Plan, for 1991 Field Season, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California. Volume I: Synopsis of Testing and Evaluation and Historic Properties Treatment Plan
S-000595	R. F. King	1974	A Report on the Status of Generally Available Data Regarding Archaeological, Ethnographic, and Historical Resources Within a Five-Mile-Wide Corridor Through Portions of Colusa, Yolo, Solano, and Contra Costa Counties, California
S-000848	David A. Fredrickson	1976	A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources
S-002661	Christian Gerike	1980	Tulucay S/S and Vaca-Dixon S/S to American Canyon Junction Study Corridor, Archaeological Sensitivity Map (letter report)
S-017835	Judy Myers Suchey	1975	Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium
S-020436	Andrew Hope	1988	Historic Property Survey Report for the proposed Widening of I-80 Bridges at Gibson Canyon Creek and Sweeney Creek in Solano County. 04-Sol-80, Post Miles 31.1/ 32.8; EA 0T0601
S-023674	Michael J. Moratto et al.	1994	Archaeological Investigations, PGT-PG&E Pipeline Expansion Project, Idaho, Washington, Oregon, and California: Volume 1 Project Overview, Research Design and Archaeological Inventory
S-030204	Donna L. Gillette	2003	The Distribution and Antiquity of the California Pecked Curvilinear Nucleated (PCN) Rock Art Tradition
S-032596	Randall Milliken, Jerome King, and Patricia Mikkelsen	2006	The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways
S-033600	Jack Meyer and Jeff Rosenthal	2007	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4
S-044434	Andrew Hope and Jennifer Blake	2013	Historic Property Survey Report, District 4, Solano County, Route 80, 0412000483; EA 4G510
S-047656	Michael J. Moratto et al.	1992	Final Cultural Resources Monitoring Plan for "A" Construction Spreads, PGT-PG&E Pipeline Expansion Project
S-047936	Jeremy Adams	2012	Vaca-Dixon-Lakeville 230-kV Reconductoring Project, Sonoma, Napa, and Solano Counties, Historical and Architectural Investigations for the Transmission Lines and Lakeville Substation
S-056118	Cindy L. Baker and Tracy Bakic	2003	National Register of Historic Places Evaluation, Vaca-Dixon Substation, Solano County, California, Final Report

TABLE 5.4-2 PREVIOUSLY RECORDED CULTURAL RESOURCES WITHIN 1 MILE OF THE PROJECT

Primary/Trinomial	Age	Archaeological/ Built Environment	Description	Within Project Site? (Yes/No)
P-48-000177 CA-SOL-000382H	Historic	Built Environment	Historic ranch building and well site	No
P-48-000178 CA-SOL-000383H	Historic	Built Environment	Segment of Leisure Town Road	No
P-48-000409 CA-SOL-000362H	Historic	Built Environment	Scatter of sheet iron, glass fragments, rusted metal, bolts, wood scraps and sawn bone	No
P-48-001604	Historic	Built Environment	Segment of the Tulucay-Vaca 230-kV Transmission Line	No
P-48-002041	Historic	Built Environment	Vaca-Dixon Substation	No
11-ISO-12*	Pre-contact	Archaeological	Quartzite cobble	No

*GIS data not provided by the NWIC

Tribal Consultation

Applicant's Findings

The applicant's consultant requested a search of the NAHC Sacred Lands Files (SLF) for a review of the commission's SLF records regarding the project site on January 19, 2024. A response letter was received on February 8, 2024, stating that, "A record search of the Native American Heritage Commission (NAHC) SLF was completed for the information you have submitted for the above referenced project. The results were negative" (ICF 2025, page 6-5).

The applicant's consultant had received three tribal responses by February 2025, at the time the final updated Cultural Resources Inventory Report for the Corby Battery Energy Storage System Project In Solano County was prepared. On May 30, 2024, Dalton Brown sent an email stating that he is no longer the Chief Administrative Officer of Wilton Rancheria, and he provided contacts for Chief Operating Officer, Chris Franklin, Chief of Staff, Samantha Cypret, and Chief Financial Officer, Lorenzo Hines. On July 7, 2024, Victoria Delgado, Cultural Resources Office Coordinator, sent a letter from Yvonne Perkins stating that the project is within the "aboriginal territories of the Yocha Dehe Wintun Nation" and that the Tribe has cultural interest and authority in the project area and would like to initiate formal consultation with the lead agency. On July 7, 2024, Leland Kinter, Tribal Treasurer, Yocha Dehe Wintun Nation said he was interested in the project and would like to send over more contacts from their cultural department however, no contacts were received (ICF 2025, page 6-5).

CEC Findings

Pursuant to their responsibilities under CEQA, the CEC staff contacted the NAHC and on October 31, 2024, the CEC revived a response from the NAHC with negative findings.

To date, no tribal responses have been received by CEC staff from the consultation letters sent on October 22, 2025, (after the application was deemed complete), with follow-up e-mails on December 11, 2025 and phone calls on December 12, 2025.

Historical Society Outreach

The results of the applicants qualified consultant email historical society outreach conducted in January and February 2025 are as follows.

TABLE 5.4-3 LOCAL HISTORICAL SOCIETY OUTREACH

Name of Organization	Contact Information	Type and Dates(s) of Outreach	Summary of Communication
Solano County Historical Society	P.O. Box 3009 Fairfield, CA 94533 solanohistory@gmail.com 707-447-0518	Email January 24, 2025, and February 6, 2025	No response as of February 21, 2025
Solano County Genealogical Society	610 East Main Street, 2nd Floor Vacaville, CA 95688 scgs@scgsca.org 707-446-6869 https://www.scgsca.org/contact.php	Email January 24,2025, and February 6, 2025	No response as of February 21, 2025
Vacaville Heritage Council	618 East Main Street Vacaville, CA 95688 vacavilleheritagecouncil@gmail.com 707-447-0518 https://www.vacavilleheritagecouncil.org/contact-us/	Email January 24, 2025, and February 6, 2025	No response as of February 21, 2025
Vacaville Museum	213 Buck Avenue Vacaville, CA 95688 info@vacavillemuseum.org https://vacavillemuseum.org/contact-us/	Email January 24, 2025, and February 6, 2025	February 14, 2025: Reply stated the organization will review project and asked when comments are due. ICF replied by end of day February 19. No other responses received as of February 19, 2025.

Built Environment Desktop Survey Findings

The built environment desktop survey evaluated multiple parcels within the boundaries of the study area. Of these, 10 parcels containing buildings and structures were identified to survey and document. One transmission line occupying five parcels was identified. An additional two parcels contain the previously surveyed power station and substation. The other 32 parcels are either vacant, not age-eligible, or have buildings

outside the Study Area. The built environment resources identified for survey and CRHR evaluation are summarized below (ICF 2025, page 6-7).

TABLE 5.4-4 BUILT ENVIRONMENT RESOURCES IN THE BUILT ENVIRONMENT STUDY AREA

P-Number/ID	APN	Address or Property Name	Description	2024 CRHR Evaluation Yes/No
CB-01	0133-040-170	7046 Mills Lane	Building/Structure	No
CB-02	0133-040-160	7038 Mills Lane	Building/Structure	No
CB-03	0141-010-090	7028 Byrnes Road	Building/Structure	No
CB-04	0141-010-050	6991 Byrnes Road	Building/Structure	No
CB-05	0141-010-060	6975 Byrnes Road	Building/Structure	No
CB-06	0141-010-070	6957 Byrnes Road	Building/Structure	No
CB-07	0141-010-080	5405 Kilkenny Road	Building/Structure	No
CB-08	0141-030-010	5310 Kilkenny Road	Building/Structure	No
CB-09	0109-270-010	7180 Meridian Road	Building/Structure	No
CB-10	0133-050-010	5131 Ellsworth Road	Building/Structure	No
P-48-001604	0106-280-030	Tulucay-Vaca 230-kV Transmission Line	Transmission Line	No
P-48-002041	0133-060-070	Vaca-Dixon Historic District	Transmission Line Building/Structure	Yes
CB-11	0133-060-060 0133-110-020 0133-060-030 0133-060-040 0133-060-050	Vaca-Peabody 230-kV Transmission Line	Transmission Line	Yes
P-01-0010499	0133-060-060 0133-110-020 0133-060-030 0133-060-040 0133-060-050	Vaca-Tesla 500-kV Transmission Line	Transmission Line	No
CB-15	Various	Gibson Canyon Creek Flood Control Channel	Water Conveyance	No
CB-16	Various 0133-060-050 0133-060-040 0141-010-020 0133-060-060	Solano Irrigation District Lateral 4-C	Water Conveyance	No
CB-17	N/A	Byrnes Road	County Road	No
CB-18	N/A	Weber Road	County Road	No
CB-19	N/A	Kilkenny Road	County Road	No
CB-20	N/A	N. Meridian Road	County Road	No
CB-21	N/A	Interstate (I) 80/U.S. Route 40	Interstate Road	No
CB-22	Various 0133-110-010 0133-110-020 0141-010-030	Kilkenny Canal	Water Conveyance	No

TABLE 5.4-4 BUILT ENVIRONMENT RESOURCES IN THE BUILT ENVIRONMENT STUDY AREA

P-Number / ID	APN	Address or Property Name	Description	2024 CRHR Evaluation Yes / No
CB-23	Various 0106-280-030 0106-250-140	Irrigation Channel at N. Meridian	Water Conveyance	No
CB-24	Various 0106-280-060 0106-280-020	Irrigation Channel West of Vaca-Dixon Substation	Water Conveyance	No
CB-25	Various 0141-030-060 0141-030-040 0141-010-170 0141-010-160 0133-100-150 0133100070 0133100160	Solano Irrigation District Lateral 4-D	Water Conveyance	No
CB-26	Various 0141-010-090	Irrigation Channel East of Byrnes Road	Water Conveyance	No
CB-27	Various 0133-040-050 0133-040-170 0133-040-200 0106-270-190 0106-270-220	Irrigation Channel At Mills Lane	Water Conveyance	No

CB#'s are temporary numbers assigned to individual properties by applicant's cultural consultant in surveying the PAA. P#'s are cultural resource identifiers provided by the NWIC.

Results of Pedestrian Surveys

Archaeological Resources

No Native American or historic-era archaeological resources were identified within the archaeological study area during any of the three archaeological resource pedestrian surveys.

Built Environment Desktop and Pedestrian Surveys

The results of the built environment desktop survey, and separate built environment field surveys, conducted on June 27, 2024, and January 29, 2025, conducted by the applicant's SOI-qualified architectural of the built environment PAA, are as follows.

The applicant's consultant architectural historians identified multiple built environment historical resources requiring investigation. Two of these resources have been previously evaluated for CRHR eligibility, the Tulucay-Vaca 230-kV Transmission Line and the Vaca-Dixon Substation. A total of 25 built environment properties were investigated (ICF 2025, page 7-1). The results of past and current CRHR evaluations are summarized below (ICF 2025, page 8-1 and 8-2).

TABLE 5.4-5 CRHR ELIGIBILITY FOR BUILT ENVIRONMENT RESOURCES IN THE PAA

P-Number / ID	Address or Property Name	Description	Eligible for Listing in the CRHR?
CB-01	7046 Mills Lane	Building/Structure	No
CB-02	7038 Mills Lane	Building/Structure	No
CB-03	7028 Byrnes Road	Building/Structure	No
CB-04	6991 Byrnes Road	Building/Structure	No
CB-05	6975 Byrnes Road	Building/Structure	No
CB-06	6957 Byrnes Road	Building/Structure	No
CB-07	5405 Kilkenny Road	Building/Structure	No
CB-08	5310 Kilkenny Road – Catherine Kilkenny Residence	Building/Structure	Yes
CB-09	7180 Meridian Road	Building/Structure	No
CB-10	5131 Ellsworth Road	Building/Structure	No
P-48-001604	Includes a segment of Tulucay-Vaca 230-kV Transmission Line	Transmission Line	No
P-48-002041	Vaca-Dixon Historic District	Transmission Line Building/Structure	Yes
CB-11	Vaca-Peabody 230-kV Transmission Line	Transmission Line	Yes
P-01-0010499	Vaca-Tesla 500-kV Transmission Line	Transmission Line	No
CB-15	Gibson Canyon Creek Flood Control Channel	Water Conveyance	
CB-16	Solano Irrigation District Lateral 4-C	Water Conveyance	No
CB-17	Byrnes Road	County Road	No
CB-18	Weber Road	County Road	No
CB-19	Kilkenny Road	County Road	No
CB-20	N. Meridian Road	County Road	No
CB-21	Interstate (I) 80/U.S. Route 40	Interstate Road	No
CB-22	Kilkenny Canal	Water Conveyance	No
CB-23	Irrigation Channel at N. Meridian	Water Conveyance	No
CB-24	Irrigation Channel West of Vaca-Dixon Substation	Water Conveyance	No
CB-25	Solano Irrigation District Lateral 4-D	Water Conveyance	No
CB-26	Irrigation Channel East of Byrnes Road	Water Conveyance	No
CB-27	Irrigation Channel at Mills Lane	Water Conveyance	No

CB#'s are temporary numbers assigned to individual properties by applicant's cultural consultant in surveying the PAA. P#'s are cultural resource identifiers provided by the NWIC.

Finally, within the study area or PAA for built environment resources, using tax records the applicant's consultant identified 20 parcels with built environment resources that post-date 1980. The consultant architectural historians reviewed the addresses containing post-1980 built environment features on Google Earth to complete a desktop review to determine if any resources warranted evaluation as properties that have

achieved significance in the past 50 years. No resources that post-date 1980 were identified within the PAA for built environment resources requiring CRHR evaluation (ICF 2025, page 6-7).

Please see the following section for a more detailed discussion of individual built environment properties evaluated herein.

Resource Descriptions and CRHR Evaluations

No archaeological sites are detailed below as none were identified within the archaeological study area or archaeological PAA.

For a cultural resource to be a historical resource and thus subject to the requirements of CEQA, it must meet one of the four criteria for listing in the CRHR (outlined above under Regulatory). A description and CRHR evaluation of newly recorded built environment properties listed in the above **Table 5.4-5** within the built environment PAA follows.

The CEC staff concur with the applicant consultant's recommendations for CRHR findings with one exception. The applicant's consultant recommended that the residence and all building features located at 5310 Kilkenny Road were not eligible to the National Register of Historic Places (NRHP) or the CRHR. The CEC staff has determined that the Catherine Kilkenny Residence, located at 5310 Kilkenny Road, appears eligible to the CRHR.

The following NRHP/CRHR evaluations, with exception of text written for 5310 Kilkenny Road – Catherine Kilkenny Residence, have been edited and do not contain all of the detailed descriptive or research data presented in the updated February 2025 Cultural Resources Report for the Corby Battery Energy Storage System Project in Solano County, California.

CB-01: 7046 Mills Lane

The parcel at 7046 Mills Lane is located on a 4.6-acre rectangular parcel (APN 0133-040-170) in unincorporated Solano County at the intersection of the north terminus of Mills Lane and a dirt road that parallels an irrigation canal. The parcel is improved with a residence, an accessory structure, shipping container, hardscape and vegetation, and fallow farmland. A rectangular landscaped median and a gravel and concrete driveway is located between Mills Lane and the residence. The contemporary common Ranch-style residence, built in 1976, is set back about 50 feet east of Mills Lane.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 7046 Mills Lane does not have important associations with historic events, patterns, or trends of development. Constructed well after the earliest agricultural development in the area, this property did not contribute to the development of Vacaville as an agricultural center. The subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations

with the lives of persons important to history. There is no evidence that any of the owners or tenants of the property were historically significant. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The builder and architect are unknown, and the building does not represent the best example of their style. The subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield in the future important information about our past. Typical of similar buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 7046 Mills Lane is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-5).

CB-02: 7038 Mills Lane

7038 Mills Lane is located on a 4.6-acre rectangular parcel in unincorporated Solano County (APN 0133-040-160) southeast of the intersection of the north terminus of Mills Lane and a dirt road that parallels an irrigation canal. The parcel is improved with a residence, accessory structures, hardscape and vegetation, a swimming pool, and fallow farmland. The contemporary Spanish Colonial Revival residence is set back about 50 feet east of Mills Lane. The residence, constructed in 1976, is one story and has an irregular plan, stucco siding, and mixed gable and hip roof clad in clay tiles.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 7038 Mills Lane does not have important associations with historic events, patterns, or trends of development. Constructed well after the earliest agricultural development in the area, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that any of the owners or tenants of the property were historically significant. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The subject parcel has a residence built in 1976. In the 2000s, it was heavily altered with features more reminiscent of the Spanish Colonial Revival style including stucco walls and clay tile roofing. The subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield in the future important information about our past. Typical of similar

buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 7038 Mills Lane is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-6 and 7-7).

CB-03: 7028 Byrnes Road

7028 Byrnes Road is located on a 38-acre irregularly shaped parcel in unincorporated Solano County (APN 0141-010-090) southeast of Weber and Byrnes Road. The parcel is improved with a residence built in 1925, two accessory structures, hardscape and vegetation, fencing and remnant animal pens, and fallow farmland. Byrnes Road and agricultural parcels are located west of the property, Weber Road and agricultural parcels are north, commercial and residential parcels are east, and an irrigation channel and agricultural parcels are south.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 7028 Byrnes Road does not have important associations with historic events, patterns, or trends of development. Constructed well after the earliest known agricultural development in the area, this property did not contribute to the development of Vacaville as an agricultural center. The subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that any of the owners or tenants of the property were historically significant. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The subject parcel consists of a residence constructed in 1925. The builder and architect are unknown, and the building does not represent the best example of their style. The subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield in the future important information about our past. Typical of similar buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 7028 Byrnes Road is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-7 and 7-8).

CB-04: 6991 Byrnes Road

6991 Byrnes Road is located on a 9-acre rectangular parcel in unincorporated Solano County (APN 0141-010-050). The parcel is improved with a common ranch style residence built in 1968, three accessory structures, one shipping container storage unit, hardscape and vegetation, and fallow farmland. Agricultural parcels are located west of the property, an irrigation channel and agricultural parcel are north, Byrnes Road and agricultural parcels east, and residential parcels and agricultural parcels are south.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property does not have important associations with historic events, patterns, or trends of development. Constructed well after the earliest agricultural development in the area, this property did not contribute to the development of Vacaville as an agricultural center. The subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that any of the owners or tenants of the property were historically significant. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The builder and architect are unknown, and the buildings do not represent the best example of their style. Finally, the subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield in the future important information about our past. Typical of similar buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the mid-twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 6991 Byrnes Road is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-8 and 7-9).

CB-05: 6975 Byrnes Road

The property at 6975 Byrnes Road is located on a 10.54-acre parcel in unincorporated Solano County between Kilkenny and Weber Roads. The building is oriented east toward Byrnes Road. The parcel is an irregular shape, with a small bump out at the southeast corner; the residential building (built in 1976) and all outbuildings, sheds, and a windmill are situated in this bump out while the rest of the parcel is occupied by fields. The residence is designed in the Ranch style. There is a semi-circular drive leading to the building; it is accessed via metal gates. The parcel is enclosed with a metal fence.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 6975 Byrnes Road does not have important associations with historic events, patterns, or

trends of development. Constructed well after the earliest agricultural development in the area, this property did not contribute to the development of Vacaville as an agricultural center. Additionally, the current buildings mostly date to the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that anyone associated with the property was significant in the development of the area. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The subject building is a Ranch-style residence, featuring characteristic one-story massing, minimal ornamentation, and prominent garage. The architect and builder are unknown, and the subject building does not rise to a level that would make it a significant example of its type. Finally, the subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield important information about our past. Typical of similar buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 6975 Byrnes Road is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-9 and 7-10).

CB-06: 6957 Byrnes Road

The property at 6957 Byrnes Road is located on an 11.77-acre parcel in unincorporated Solano County between Kilkenny and Weber Roads. The vernacular single-family residence, constructed in 1920, is oriented east toward Byrnes Road. The parcel is in an irregular shape, with a small cutout at the northeast corner. A paved driveway leads from the street to the center of the parcel, where all the buildings and structures are clustered. Buildings and structures on the parcel include two single-family residences; a monitor barn; two manufactured homes; and two open-sided metal sheds. The rest of the parcel is occupied by agricultural fields.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 6957 Byrnes Road does not have important associations with historic events, patterns, or trends of development. Although this property predates many of the newer agriculture related residences in the area, there is no evidence that this property contributed in a meaningful way to the development of Vacaville as an agricultural center. While the site does contain several character-defining features of a residential agricultural property, it does not rise to a level of significance due to alterations to the lot including subdividing a larger parcel into smaller ones and to a lack of understanding of what the barn and smaller residence were used for. The subject property is not significant under

NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that anyone associated with the property was significant in the development of the area. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The residential building on the subject property is an example of rural vernacular architecture. As such, the building lacks character-defining features and does not convey an association with any distinct architectural style. Finally, the subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield in the future important information about our past. Typical of similar buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 6957 Byrnes Road is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-10 and 7-11).

CB-07: 5405 Kilkenny Road

The property at 5405 Kilkenny Road is located on a 10.36-acre parcel in unincorporated Solano County at the northwest intersection of Kilkenny and Byrnes Roads. The building is oriented south toward Kilkenny Road. The parcel is rectangular; the residential building and all outbuildings are situated in southeast portion while the rest of the parcel is occupied by fields. Structures on the parcel include: a large, corrugated metal shed that is open at the ends and two outbuildings immediately to the east of the residential building; a small outbuilding to the north of these structures; and a corrugated metal structure to the east of the other buildings. The Ranch-style single-family rectangular-plan one-story residential building clad in stucco, constructed in 1975, sits near the southeast corner of the parcel.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 5405 Kilkenny Road does not have important associations with historic events, patterns, or trends of development. Constructed well after the earliest agricultural development in the area, this property did not contribute to the development of Vacaville as an agricultural center. The subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that anyone associated with the property was significant in the development of the area. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect,

builder, designer, or engineer. The subject building is a Ranch-style residence, featuring characteristic one-story massing, minimal ornamentation, and prominent garage. The architect and builder are unknown, and the subject building does not rise to a level that would make it a significant example of its type. Finally, the subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield in the future important information about our past. Typical of similar buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 5405 Kilkenny Road is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-11 and 7-12).

CB-08: 5310 Kilkenny Road – Catherine Kilkenny Residence

5310 Kilkenny Road is briefly described as a 2.76-acre parcel in unincorporated Solano County between Byrnes and Willow Roads. The parcel is heavily planted, with a variety of types of trees providing privacy and wind screens. The front of the parcel is enclosed in a brick and metal fence, with a metal gate accessing a circular driveway leading to the residence. To the right of the residence is a wooden barn, set back from the road and largely obscured by trees, and to the left is a tank house.

The 5310 Kilkenny Road property, otherwise referred to herein and/or in other docketed items variously as the historic Catherine Kilkenny Residence, the Catherine Kilkenny Ranch Farmstead, the Kilkenny Ranch Home, and the Michael and Linda Geller Residence, is the subject of varying opinions regarding its eligibility to the NRHP and/or CRHR.

Original Applicant's Consultant Eligibility Summary. This property was evaluated in detail by the applicant's cultural resource consultant as not eligible to the NRHP or CRHR in a February 2025 Cultural Resources Report for the Corby Battery Energy Storage System Project in Solano County, California (ICF 2025, page 7-13 to 7-15). A separate Department of Parks and Recreation (DPR) 523 Office of Historic Preservation historic resource inventory form was prepared for the property noting, "In conclusion, the subject property is not individually eligible for listing in the NRHP and CRHR under any Criteria. This property was evaluated in accordance with Section 15064.5(a)(2)– (3) of the CEQA Guidelines, using the criteria outlined in Section 5024.1 of the California Public Resources Code, and is not a historical resource for the purposes of CEQA" (ICF 2025, pp 5-9 to 5-10).

Revised Eligibility Review. In opposition to the opinion of the applicant's cultural resource consultant, Elissa DeCaro, President, Solano County Historical Society writes

the following in a November 6, 2025, letter to the California Energy Commission (TN 267061).

> The Solano County Historical Society is steadfastly opposed to the Corby Battery Storage Project at the proposed location for its high potential for significant adverse change and irreparable harm to the surrounding multi-faceted historically and environmentally significant properties.
>
> The proposed project is adjacent to a significant historical resource identified as the Kilkenny Ranch Home. The Queen Anne home built by master builder George Hutton Sharpe for Catherine Kilkenny in 1900, a significant person for California Women's History as an influencer for the ranching boom enjoyed in Solano County in the late 1800s. The home is the sole remaining example of Mr. Sharpe's work in a pristine rural setting, and a shining example of the exemplary craftsmanship he was known for throughout the Elmira/Vacaville/Dixon/Batavia area from 1890-1910.
>
> In addition to the historic significance of the Kilkenny property, the parcel supports a private arboretum of several hundred trees including more than 100 different species of trees, including more than 50 species of oaks, which makes it one of the largest private oak collections in the United States. The rural open space setting is home to several remnant trees from the late 1800's including a Blue Gum Eucalyptus, a California Black Walnut and a Seville Orange which was a favorite of Irish families for marmalade and jams. The property is recognized by the National Wildlife Federation as a Certified Wildlife Habitat (SCHS 2025).

Michael and Linda Geller, the owners of 5310 Kilkenny Road, in separate but almost identical comments received by CEC on December 5, 2024 (TN 260489 and TN 260488), write that they own the subject property. Michael Geller's comments note:

> My wife and I own the historic home at 5310 Kilkenny Road, approximately one quarter mile from the proposed Battery Energy Storage System proposed by Corby Energy. The home was constructed in 1900 by renowned builder George H. Sharpe and represents the last of the Victorian homes and farmhouses Mr. Sharpe became famous for. Other prominent structures he built still standing today include the Frank H. Buck home, the William Henry Buck home, the Harbison House at the Nut Tree and the Carnegie Library to name just a few in Vacaville. We are in the process of securing California Historic Landmark status as well as National Register of Historic Places status for our home. The Corby BESS project will cause substantial adverse change to the prime agricultural land that once was part of the original 167 acres purchased by Anthony Kilkenny in 1875. After the death of Mr. Kilkenny in 1886, Catherine, his wife, went on to become a successful farmer and rancher and purchased several more non-adjacent properties in the area. In fact, shortly before her death in 1921 she sold some of her property to PG&E to construct the Vaca-Dixon Substation (Geller 2024a, 2024b).

The CEC Staff Eligibility Summary. The CEC staff have reviewed all professionally prepared and personal comments and opinions regarding the historic nature and quality of the property located at 5310 Kilkenny Road and conducted independent in-depth historical research into the CRHR eligibility of 5310 Kilkenny Road. Contrary to the applicant's cultural resource consultant findings, the CEC staff has determined that the Catherine Kilkenny Ranch Residence located at 5310 Kilkenny Road appears eligible to the CRHR.

However, CEC staff recommendations apply to the Catherine Kilkenny Residence only. No buildings, structures, objects, or landscape features on any portion of the larger property are included in this eligibility recommendation. In support of the above recommendation, a DPR 523 Update was prepared. This update is on file at CEC's Cultural Resources Unit. It reads, in part,

> This summary of alterations to the original Catherine Kilkenny Farmstead, a portion of which is now the Michael and Linda Geller Residence and Gardens, has been prepared primarily using historic aerials, with other sources including historic maps, consultant prepared cultural resource management reports, in-depth CEC staff research, and communications to CEC via email, personal testimony, and other forms of communication by those opposed to the Corby BESS Project.
>
> In brief, the historic-age Catherine Kilkenny Ranch Farmstead, otherwise referred to variously as the historic Catherine Kilkenny Residence, the Catherine Kilkenny Ranch Farmstead, the Kilkenny Ranch Home, and the Michael and Linda Geller Residence, is the subject of varying opinions regarding its eligibility to the NRHP and/or CRHR. The following [information] records just how massively altered in terms of size, shape, and number and type of building features, the original Catherine Kilkenny Farmstead really is. There is literally nothing of significance left of the historic-age farmstead with the exception of the circa 1900 Catherine Kilkenny Residence, and several minor remnant trees. Today's Geller Residence and surrounding landscaped property with gardens and multiple outbuildings is not an historic farmstead. Rather, it is a wonderfully creative but never-the-less fantasy or "Disneyesque" owner-inspired recreation of a historic Solano County farmstead. The circa 1900 Catherine Kilkenny Residence has also been substantially altered by a large one-story wrap-around addition to the rear…The non-historic farmstead includes a non-historic circa 2007 garage with clock cupola, a circa 2013 kit barn, and a circa 2019 tank house (CEC 2025a)

CEC staff therefore conclude the following regarding the CRHR eligibility of the Catherine Kilkenny Residence.

<u>CRHR Criterion 1: Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage</u>. The Catherine Kilkenny Residence is on a property located at 5310 Kilkenny Road. The subject property cannot

be considered as a historic farmstead displaying important associations with historic events, patterns, or trends of agricultural development in Solano County development. More specifically, the subject property does not retain historic-age ancillary buildings that constitute a mid-sized agricultural ranch property or farmstead like other NRHP- or CRHR-eligible properties in Solano County. All ancillary buildings on the property are modern, having been constructed within the last 15 years, and, therefore, do not convey any association with the historic use of the property. Most trees and gardens also appear to have been developed within the last 30 years or so under the ownership of Michael and Linda Geller. As such, the subject property does not exemplify the late-nineteenth and early-twentieth century agricultural development typology as a farmstead with a historic residence surrounded by historic ancillary structures and groves. Today's Geller Residence and surrounding landscaped property with gardens and multiple outbuildings is not an historic farmstead. Rather, it is a wonderfully creative but never-the-less fantasy or "Disneyesque" owner-inspired recreation of a historic Solano County farmstead. Finally, the original Kilkenny-owned property at this location was approximately 167 acres in size. Today's 2.76-acre property represents a small fraction of the original.

In conclusion, CEC staff conclude that the Catherine Kilkenny Residence located at 5310 Kilkenny Road is not eligible for listing under CRHR Criterion 1 and for local listing. This recommendation applies specifically to the residence only. CEC staff also conclude and recommend that the larger 2.76-acre property surrounding the Catherine Kilkenny Residence containing non-historic outbuildings and non-historic landscaping and gardens, etc., is not eligible for listing under CRHR Criterion 1 and for local listing.

CRHR Criterion 2: Is associated with the lives of persons important in our past. The Catherine Kilkenny Residence is on a property located at 5310 Kilkenny Road. It is significant as a personal residence only in association primarily with Catherine Kilkenny but also with various additional members of the Kilkenny family. Previous residences on the property are no longer extant and there are no major historic ancillary buildings remaining in association with the Catherine Kilkenny Residence. The original Kilkenny property at this location was approximately 167 acres in size. Today's 2.76-acre property represents a small fraction of the original. The Kilkenny family-maintained ownership of the land from 1875 to 1969, was passed on through inherited generations, though the subject property was one of many the Kilkenny family-owned in the larger Solano County-Vacaville area. Catherine Kilkenny, the owner when the subject residence was built, played a role in expanding Kilkenny family landholding in the larger Vacaville area. The family did, in fact, play a recognized role in the agricultural industry in Solano County. Catherine's descendants, Thomas A. and James J., owned and leased numerous large plots of land in Vacaville and Solano County in the early-to-mid-twentieth centuries. Thomas A. and James J. were active members of local organizations and had associations with Solano County business and agricultural operations.

In conclusion, CEC staff conclude that the Catherine Kilkenny Residence located at 5310 Kilkenny Road is eligible for listing under CRHR Criterion 2 and for local listing. This recommendation applies specifically to the residence only. CEC staff conclude and recommend that the larger 2.76-acre property surrounding the Catherine Kilkenny Residence containing non-historic outbuildings and non-historic landscaping and gardens, etc., is not eligible for listing under CRHR Criterion 2 and for local listing.

CRHR Criterion 3: Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values. The Catherine Kilkenny Residence is on a property located at 5310 Kilkenny Road. The residence is a modest and altered example of late-Victorian, frequently referred to as Queen Anne-style architecture common to urban and rural residences across California in the late-nineteenth and early-twentieth centuries. It is a modest example of its type presenting a curious combination of design details and characteristics from other popular styles. This could indicate that the residence was altered over time.

George Sharpe can be considered a local master builder/contractor of Solano County and specifically, the Vacaville area. Sharpe was known for late-Victorian era residential constructions and civic constructions, often winning the bids of educational and religious construction projects in the Vacaville area during the late-nineteenth and early-twentieth centuries. In particular, Sharpe constructed a series of large single-family houses for wealthy Vacaville community members on Buck Avenue in the 1890s and 1900s that exemplified late-Victorian and turn-of-the-century styles.

The Catherine Kilkenny Residence is recognized as being associated with George Sharpe. As such, and despite the fact that the residence is a modest and altered example of its type, this association is significant.

In conclusion, CEC staff conclude that the Catherine Kilkenny Residence located at 5310 Kilkenny Road is eligible for listing under CRHR Criterion 3 and for local listing. This recommendation applies specifically to the residence only. CEC staff conclude and recommend that the larger 2.76-acre property surrounding the Catherine Kilkenny Residence containing non-historic outbuildings and non-historic landscaping and gardens, etc., is not eligible for listing under CRHR Criterion 3 and for local listing.

CRHR Criterion 4: Has yielded, or may be likely to yield, information important in prehistory or history. The history of the Catherine Kilkenny Residence located at 5310 Kilkenny Road is well documented. Multiple primary sources of information have been used to document the history of the residence, and the majority of specific questions regarding the history of the residence or the larger 2.76-acre property have already been realized. Consequently, listing the Catherine Kilkenny Residence in accordance with CRHR Criterion 4 is not likely to yield additional information important in prehistory or history.

In conclusion, the CEC staff conclude that the Catherine Kilkenny Residence located at 5310 Kilkenny Road is not eligible for listing under CRHR Criterion 4 and that the larger 2.76-acre property surrounding the Catherine Kilkenny Residence containing non-historic outbuildings and non-historic landscaping and gardens, etc., is also not eligible for listing under CRHR Criterion 4 and for local listing.

In summary, the CEC staff conclude that the Catherine Kilkenny Residence located at 5310 Kilkenny Road minimally qualifies as eligible to the CRHR despite numerous alterations to the residence, and massive alterations to the original farmstead to which it originally belonged. This conclusion assumes that the main exterior elevation of the Catherine Kilkenny Residence appears similar today to how it appeared after being built circa 1900 and prior to the death of Catherine Kilkenny in 1921. Recent email correspondence between the CEC staff and various members of the Kilkenny family have confirmed the similarity through comparison of historic and current photographs. CEC staff further conclude that only the Catherine Kilkenny Residence is eligible to the CRHR and that the surrounding and non-historic Michael and Linda Geller Gardens and newer and non-historic or highly altered ancillary buildings which surround the Catherine Kilkenny Residence are not eligible to the CRHR.

CB-09: 7180 Meridian Road

The property at 7180 Meridian Road is located on a 57.07-acre parcel in unincorporated Solano County between Interstate 80 (I-80) and Midway Road. Buildings and structures on the parcel include: a large residential building built circa 1908; a large metal shed; two outbuildings; a wood-frame and wood-clad tankhouse; an open-stall style barn; and a water tank. Aerial images reveal the foundations of several non-extant structures to the east of these buildings.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 7180 Meridian Road does not have important associations with historic events, patterns, or trends of development. Although this property predates many of the newer agriculture related residences in the area, there is no evidence that this property contributed in a meaningful way to the development of Vacaville as an agricultural center. The subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that anyone associated with the property was significant in the development of the area. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The residential building on the subject property is an example of rural vernacular architecture. As such, the building lacks character-defining features and does not convey an association with any distinct architectural style. The architect and builder are unknown, and the subject building does not rise to a level that would make it a significant example of its type. Finally, the subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact

properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded to date, nor is it likely to yield in the future important information about our past. Typical of similar buildings, the buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 7180 Meridian Road is not eligible for listing in the CRHR under any criteria (ICF 2025, page 7-16 and 7-17).

CB-10: 5131 Ellsworth Road

The property at 5131 Ellsworth Road is located on a 10.09-acre parcel in unincorporated Solano County at the northwest intersection of Ellsworth and Quinn roads. Ten light-industrial metal buildings constructed between 1968 and 1984 sit on the parcel. Their construction dates are unknown but range from 1968–2016. They are positioned at the front boundary of the lot and along the southern and eastern edges of the water feature, allowing a path for vehicular traffic through the site.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property at 5131 Ellsworth Road does not have important associations with historic events, patterns, or trends of development. The light-industrial usage of the parcel did not contribute to the agricultural trends that dominated the area. The subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. There is no evidence that any of the owners or tenants of the property were historically significant. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The buildings on the subject parcel are all light-industrial metal buildings constructed between 1968 and 1984. The architect and builder are unknown, and the subject building does not rise to a level that would make it a significant example of its type. Finally, the subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the subject property and all building thereon have neither yielded to date, nor is it likely to yield in the future important information about our past. The buildings on the parcel do not appear to have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, 5131 Ellsworth Road is not eligible for listing in the CRHR under any criteria (ICF 2025,page 7-17 and 7-18).

Tulucay-Vaca 230-kV Transmission Line (P-48-001604)

A portion of the Tulucay-Vaca 230-kV Transmission Line is located within the 0.5-mile-radius architectural history study area. Constructed in 1956, the line stretches from the Tulucay Substation in Napa County to the Vaca-Dixon Substation northeast of Vacaville. It consists of one alignment of 230-kV conductor affixed to six insulators atop steel lattice towers featuring tapered metal cages leading to narrow tower bodies with lattice cross-arms. Cardno ENTRIX first recorded and evaluated the Tulucay-Vaca transmission line in 2011 in support of the Vaca-Dixon-Lakeville 230-kV Reconductoring Project (Adams 2011). Cardno recommended that the transmission line was not significant under any NRHP/CRHR criteria, describing the line as a late-period, minor expansion of an existing transmission system that lacked any notable technological features.

In conclusion, the Tulucay-Vaca 230-kV Transmission Line is not eligible for listing in the CRHR (TT 2024a, page 4.5-14 and 4.5-15).

Vaca-Dixon Historic District (P-48-002041)

The Vaca-Dixon Substation Historic District was documented in 2002 by PAR Environmental Services, Inc. and evaluated for NRHP eligibility (Baker and Bakic 2002). The Vaca-Dixon Substation Historic District consists of an electric substation compound including the original substation with associated tunnels, switchyard, garage, outbuildings, and landscaping, as well as an office and shop building added sometime in the late 1940s. The compound was constructed in 1921–1922 by PG&E and covers approximately 18 acres of a much larger parcel owned by the company. There have been few alterations to the site, other than those necessitated by the addition of more and higher voltage transmission lines coming into the switchyard and substation. Three large condensers and heavy copper bus lines were removed from the substation in the 1980s when 500 kV current was introduced to the compound.

The Vaca-Dixon Historic District has been recommended eligible for listing under NRHP/CRHR Criterion C/1 and C/3, and as not eligible under Criteria B/2 and D/4 (TT 2024a, page 4.5-15 and 4.5-16).

CB-11: Vaca-Peabody 230-kV Transmission Line

The Vaca-Peabody 230-kV is a transmission line located across multiple parcels south of the Vaca-Dixon Substation east of Vacaville, California. The line stretches 9.69 miles from the Vaca-Dixon Substation northeast of Vacaville to the Peabody Substation in southern Vacaville. The most appropriate contexts for the evaluation of the Vaca-Peabody 230-kV Transmission Line are in the Energy Infrastructure section of this report. These contexts address development of the Pit River Hydroelectric System and PG&E's mid-twentieth century growth, which occurred concurrently to construction of this line's original, full alignment as the Vaca-Contra Costa 230-kV line, the first such transmission line to carry Pit River Hydroelectric System power to Contra Costa County.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject property appears to have important associations with historic events, patterns, or trends of development. This 1926 230-kV transmission line dates to the development of the Pit River Hydroelectric System that generated power along the Pit River, transmitted power to the Vaca-Dixon Substation, then transferred this power along radiating networks of 220-kV lines. Therefore, the subject property appears significant under NRHP/CRHR Criterion A/1 at the state level of significance with a period of significance of 1926, the year of the line's construction. Under NRHP/CRHR Criterion B/2, the subject property does not share significant associations with the lives of persons important to history. Infrastructure resources undertaken by a corporate entity rarely qualify under this criterion. Research did not provide evidence that the Vaca-Peabody 230-kV Transmission Line holds any important associations to any known agent, officer, or engineer of PG&E notable in history. The subject property is not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the subject property appears as a significant example of its type, style, or era. In brief, although it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer, the Vaca-Peabody 230-kV Transmission Line appears likely to contribute to a potential historic district, the Vaca-Dixon Historic District due to this line being one of the first such lines to transmit 220+ kV power produced by the Pit River Hydroelectric System from Vaca-Dixon Substation to Contra Costa County in the Bay Area. Therefore, the subject property appears significant under NRHP/CRHR Criterion C/3 at the state level of significance with a period of significance of 1926, the year of the line's construction. Under NRHP/CRHR Criterion D/4, the subject property has neither yielded nor is it likely to yield important information about our past. Typical of similar infrastructure resources, the subject property's steel lattice tower construction and 230-kV transmission voltage does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the mid-twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

Note: Concurrent with this proposed project, PG&E is currently preparing a Multiple Property Documentation Form for Historic-Era Energy Infrastructure and is evaluating this resource type for listing in the NRHP and CRHR. Until that documentation is complete, this resource is assumed eligible under Criteria A/1 and C/3 and therefore a historical resource for the purposes of CEQA (ICF 2025, page 7-17 to 7-20).

Vaca-Tesla 500-kV Transmission Line (P-01-0010499)

Built in 1967, the PG&E Vaca-Tesla 500-kV extra high voltage (EHV) transmission line is a 57-mile single-circuit, three phase high-voltage transmission line supported by pairs of PG&E-developed inverted U-shaped/H-frame suspension transmission towers. The line runs from the Tesla Substation in Alameda County to the Vaca-Dixon Substation in Vacaville, Solano County. Towers are approximately 140 feet tall with a base width of approximately 55 feet.

The PG&E Vaca-Tesla 500-kV EHV transmission Line (VDTTL) was previously recommended ineligible for the CRHR in 2023 by Jacobs Engineering Group, Inc. (Jacobs 2023). It does not appear that the State Historic Preservation Officer (SHPO) has concurred with this finding. The 2024 ICF study aligns with the earlier recommendation that the VDTTL is not significant under any CRHR criteria.

More specifically, under CRHR Criterion 1, the VDTTL does not have important associations with historic events, patterns, or trends of development. This line is not an early or important example of the system's development or PG&E's broader planning, construction, and completion of its first 500-kV transmission lines in California. As such, the VDTTL is not significant under CRHR Criterion 1. Under CRHR Criterion 2, the VDTTL does not share significant associations with the lives of persons important to history. Based on the considerable research conducted on the area's history, there is a reasonable likelihood that other information would not show a historically significant person associated with the subject property. The subject property is not significant under CRHR Criterion 2. Under CRHR Criterion 3, the VDTTL is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Finally, the subject property does not appear likely to contribute to a potential historic district, due to the lack of a cohesive grouping of intact properties in the area. The subject property is not significant under CRHR Criterion 3. Under CRHR Criterion 4, most specific questions regarding the history of the property have already been realized, and listing the VDTTL under this criterion is not likely to yield information about our past. The subject property is, therefore, not significant under NRHP/CRHR Criterion D/4.

In conclusion, the VDTTL is not eligible for listing in the CRHR under any criteria (TT 2024a, page 4.5-17 and 4.5-17).

CB-15: Gibson Canyon Creek Flood Control Channel

The Gibson Canyon Creek Flood Control Channel (subject property) is part unlined earthen creek channel and part earthen irrigation channel, tying into the Ulatis Flood Control Channel, measuring approximately 9.5 miles. It runs from western terminus near Gibson Canyon Road as an unlined natural earthen creek before becoming an unlined flood control channel just west of I-80. It continues its east trajectory merging with the Ulatis Flood Control Channel. The channel crosses various private parcels in Hartley, Vacaville, and Batavia. Agricultural and rural residential uses surround the channel.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the Gibson Canyon Creek Flood Control Channel does not have important associations with historic events, patterns, or trends of development. While locally tied to general flood control efforts in Vacaville, no research suggests this channel contributed to significant population, commercial, or transportation booms locally or regionally nor does it have any associations with events or early patterns of development in the flood management history of Solano County. The subject property is ineligible and not significant under

NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the Gibson Canyon Creek Flood Control Channel does not share significant associations with the lives of persons important to history. No known individuals of historical significance are directly associated with the planning, design, or construction of the channel. The flood control improvements were the result of standard municipal planning efforts rather than the work of a historically important figure. The subject property is ineligible and not significant under NRHP/CRHR Criterion B/2. Under NRHP/CRHR Criterion C/3, the Gibson Canyon Creek Flood Control Channel is not a significant example of its type, style, or era, lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. The flood control channel is a utilitarian feature designed using standard engineering practices without distinctive design elements or innovative construction techniques. It does not represent an important or unique example of flood control engineering. As a small, isolated component of a larger flood control system, the Gibson Canyon Creek Flood Control Channel would not contribute to the Solano Project or the Solano Irrigation District (SID) as a historic district. The subject property is not significant under NRHP/CRHR Criterion C/3. Under NRHP/CRHR Criterion D/4, the Gibson Canyon Creek Flood Control Channel has neither yielded nor is it likely to yield important information about our past. As a modified flood control channel, it does not possess archaeological or engineering characteristics that would contribute to a greater understanding of construction methods or technologies beyond what is already well documented. The existing alterations and realignment further diminish the potential to provide new or significant historical data. The subject property is ineligible and not significant under NRHP/CRHR Criterion D/4.

In conclusion, the subject property is not individually eligible for listing in the NRHP and CRHR under any Criteria (ICF 2025, page 7-20 to 7-22).

CB-16: Solano Irrigation District Lateral 4-C

The SID Lateral 4-C (subject property) is an unlined earthen irrigation channel parallelling the northbound Interstate I-80. The unlined earthen irrigation channel spans multiple parcels south of the Vaca-Dixon Substation east of Vacaville. The earthen irrigation channel spans 1.65 miles along a northeast-southwest alignment beginning near Vaca Valley Parkway before turning east along Weber Road then intersecting adjacent canals via a culvert at Byrnes Road. Agricultural and rural residential uses surround the irrigation channel.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, SID Lateral 4-C does not have important associations with historic events, patterns, or trends of development. As a local earthen irrigation channel, the circa (c.) 1962 SID Lateral 4-C has no strong associations with notable events or early patterns of development important to water conveyance in Solano County nor broader settlement trends in Vacaville. As such, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, SID Lateral 4-C does not share significant associations with the lives of persons important to history. Infrastructure resources overseen by a governmental entity rarely qualify under this criterion. No developmental agent of the Solano Water

Council, SID, the Ulatis Project, or the Solano Project has important associations with this c. 1962 earthen irrigation channel. Research did not provide evidence that this earthen irrigation channel holds any important associations to persons notable to history. The subject property is not significant under NRHP/CRHR Criterion B/2.

Under NRHP/CRHR Criterion C/3, SID Lateral 4-C is not a significant example of its type, style, or era. The subject property lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. This property type is ubiquitous and commonly found across agricultural landscapes in California. As such, a c. 1962 earthen irrigation channel within a well-established agricultural geographic context does not represent an early, extant example of water conveyance development in Solano County or regionally. The last component of Criterion C, representing a significant and distinguishable entity whose components may lack individual distinction, is the most applicable to districts. The SID Lateral 4-C appears unlikely to be a contributor to a potential historic district. As such, the subject property is not significant under NRHP/CRHR Criterion C/3 individually or as a contributor to an unidentified historic district. Under NRHP/CRHR Criterion D/4, SID Lateral 4-C has neither yielded nor is it likely to yield important information about our past. Typical of similar infrastructure resources, the subject property's unlined earthen construction and function as an irrigation channel does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the mid-twentieth century. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, the subject property is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-23 to 7-25).

CB-17: Byrnes Road

Byrnes Road is an approximately 3.3-mile-long road on the northeast end of Vacaville in Solano County. The concrete-paved road runs north–south, extending from Weber Road on the north, to the railroad tracks just north of Holdener Road on the south. A two-way road, it features both continuous and dashed painted yellow divider lines. Agricultural and residential uses surround the property. A few scattered trees and short irrigation ditches belonging to adjacent properties line the road. The most appropriate context for the evaluation of this property is Transportation: County Roads.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject resource, Byrnes Road in Vacaville, Solano County does not have important associations with historic events, patterns, or trends of development. Research did not yield any information that the road served as the location of an important historical event or pattern of events that helped shape the history of Vacaville or Solano County. Under NRHP/CRHR Criterion B/2, the subject resource does not share significant associations with the lives of persons important to history. Resources that are eligible under this criterion are typically associated with the productive life of a person. Research did not yield evidence that Byrnes Road shared any connection to a person who contributed to the history of

Vacaville or Solano County. Under NRHP/CRHR Criterion C/3, the subject resource is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Byrnes Road is a standard, concrete-paved, two-lane county road that was initially built as an unpaved, two-lane county road. It is a common example of this resource type and does not exhibit any high artistic value or significant engineering. Under NRHP/CRHR Criterion D/4, the subject resource has neither yielded nor is likely to yield important information about our past. Typical of similar county roads, Byrnes Road does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late-nineteenth century.

In conclusion, Byrnes Road is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-35 to 7-36).

CB-18: Weber Road

Weber Road is an approximately 3.9-mile-long road on the northeast end of Vacaville in Solano County. The concrete-paved road runs east–west, extending from Pitt School Road on the east to I-80 on the west; the road splits into two right before reaching the Interstate, transforming into the on-and off-ramp for I-80. A two-way road, it features both continuous and dashed painted yellow divider lines. Agricultural and residential uses surround the property. Telephone poles, as well as a few scattered trees and short irrigation ditches belonging to adjacent properties line the road. The most appropriate context for the evaluation of this property is Transportation: County Roads.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject resource, Weber Road in Vacaville, Solano County does not have important associations with historic events, patterns, or trends of development. Research did not yield any information that the road served as the location of an important historical event or pattern of events that helped shape the history of Vacaville or Solano County. Under NRHP/CRHR Criterion B/2, the subject resource does not share significant associations with the lives of persons important to history. Resources that are eligible under this criterion are typically associated with the productive life of a person. Research did not yield evidence that Weber Road shared any connection to a person who contributed to the history of Vacaville or Solano County. Under NRHP/CRHR Criterion C/3, the subject resource is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Weber Road is a standard, concrete-paved, two-lane county road that was initially built as an unpaved, two-lane county road. It is a common example of this resource type and does not exhibit any high artistic value or significant engineering. Under NRHP/CRHR Criterion D/4, the subject resource has neither yielded nor is likely to yield important information about our past. Typical of similar county roads, Weber Road does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late-nineteenth century.

In conclusion, Weber Road is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-35 to 7-36).

CB-19: Kilkenny Road

Kilkenny Road is a 5,150-foot-long road on the northeast end of Vacaville in Solano County. The concrete-paved road runs east–west, extending from Byrnes Road on the east to I-80 on the west. Although a two-way road, only the eastern 1,160 feet of Kilkenny Road feature painted yellow continuous and dashed divider lines; the remainder of the road is unmarked. Agricultural and residential uses surround the property. A few scattered trees and short irrigation ditches belonging to adjacent properties line the road.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject resource, Kilkenny Road in Vacaville, Solano County does not have important associations with historic events, patterns, or trends of development. Research did not yield any information that the road served as the location of an important historical event or pattern of events that helped shape the history of Vacaville or Solano County. Under NRHP/CRHR Criterion B/2, the subject resource does not share significant associations with the lives of persons important to history. Resources that are eligible under this criterion are typically associated with the productive life of a person. Research did not yield evidence that Kilkenny Road shared any connection to a person who contributed to the history of Vacaville or Solano County. Under NRHP/CRHR Criterion C/3, the subject resource is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Kilkenny Road is a standard, concrete-paved, two-lane county road that was initially built as an unpaved, two-lane county road. It is a common example of this resource type and does not exhibit any high artistic value or significant engineering. Under NRHP/CRHR Criterion D/4, the subject resource has neither yielded nor is likely to yield important information about our past. Typical of similar county roads, Kilkenny Road does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late-nineteenth century.

In conclusion, Kilkenny Road is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-36 and 7-37).

CB-20: North Meridian Road

North Meridian Road is an approximately 4.5-mile-long road on the northeast end of Vacaville in Solano County. The concrete-paved road runs mainly north–south, extending from Sweeney Road on the north, down to just before I-80, at which point it curbs southeast and crosses perpendicularly over the interstate until it reaches the west end of Weber Road. A two-way road, North Meridian Road features both continuous and dashed painted yellow divider lines. Agricultural and residential uses surround the property. A few scattered trees and short irrigation ditches belonging to adjacent properties line the road.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the subject resource, North Meridian Road in Vacaville, Solano County does not have important associations with historic events, patterns, or trends of development. Research did not yield any information that the road served as the location of an important historical event or pattern of events that helped shape the history of Vacaville or Solano County. Under NRHP/CRHR Criterion B/2, the subject resource does not share significant associations with the lives of persons important to history. Resources that are eligible under this criterion are typically associated with the productive life of a person. Research did not yield evidence that North Meridian Road shared any connection to a person who contributed to the history of Vacaville or Solano County. Under NRHP/CRHR Criterion C/3, the subject resource is not a significant example of its type, style, or era, it lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. North Meridian Road is a standard, concrete-paved, two-lane county road that was initially built as an unpaved, two-lane county road. It is a common example of this resource type and does not exhibit any high artistic value or significant engineering. Under NRHP/CRHR Criterion D/4, the subject resource has neither yielded nor is likely to yield important information about our past. Typical of similar county roads, North Meridian Road does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late-nineteenth century.

In conclusion, North Meridian Road is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-37 and 7-38).

CB-21: Interstate 80/U.S. Route 40

I-80, with portions formerly known as US-40, extends from Teaneck, New Jersey west across 11 states to San Francisco, California, spanning approximately 2,900 miles. The portion of the I-80 evaluated herein stretches approximately 1.5-miles, between the Leisure Town Road and Vaca Valley Parkway interchange and the Midway Road and Lewis Road interchange. This segment of I-80 runs along a southwest-to-northeast axis and follows a generally straight alignment. The highway consists of a paved six-lane configuration. A landscaped median separates the opposing lanes, while paved shoulders and adjacent unpaved areas flank the highway. A small concrete bridge with metal railings spans over a portion of the Gibson Creek Flood Control Channel. Further along, an overpass carries N. Meridian Road above the highway, with exit ramps on either side providing access to the local road.

Eligibility Summary. The Advisory Council on Historic Preservation (ACHP) exemption relieves federal agencies from taking into account the effects of their undertakings on the Interstate Highway System as a whole, except for select elements that possess national significance, such as certain bridges, tunnels, and rest areas (ACHP 2005). The ACHP exemption is also applied by the California Office of Historic Preservation, and the SHPO, as standard practice in reviewing Caltrans project, and the SHPO has approved all freeway projects without determining California's freeways as historically significant in accordance with federal guidelines. However, the CEC is not a federal agency, and

the following CRHR determinations are here made in consideration of the Advisory Council exemption. Under NRHP/CRHR Criterion A/1, the 1.5-mile evaluated portion of the I-80 does not have important associations with historic events, patterns, or trends of development. Under NRHP/CRHR Criterion B/2, the 1.5-mile evaluated portion of the I-80 does not share significant associations with the lives of persons important to history. Under NRHP/CRHR Criterion C/3, the 1.5-mile evaluated portion of the I-80 is not a significant example of its type, style, or era, lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. As a segment of the Interstate Highway System, it follows standardized engineering designs typical of Caltrans and federal highway guidelines. Under NRHP/CRHR Criterion D/4, the 1.5-mile evaluated portion of the I-80 has neither yielded nor is it likely to yield important information about our past.

In conclusion, the 1.5-mile evaluated portion of the I-80 is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-38 and 7-39).

CB-22: Kilkenny Canal (Solano Irrigation District Lateral 4 C-1)

The Kilkenny Canal (subject property) is a circa 1962 unlined earthen irrigation channel, tying into SID's canal at its western boundary, on the south side of I-80. The subject property parallels Kilkenny Road across multiple parcels of the Vaca-Dixon Substation east of Vacaville. The earthen irrigation channel spans approximately 1.5 miles along an east–west alignment from I-80 to its intersection with Lewis Road. Agricultural and rural residential uses surround the irrigation channel. Kilkenny Canal is an earthen irrigation channel serving as a water conveyance structure to local agricultural parcels.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the Kilkenny Canal does not have important associations with historic events, patterns, or trends of development. This earthen irrigation channel dates to c. 1962, during the period when the SID formed lease agreements with private landholders to efficiently distribute water from the Solano Project and the Gibson Canyon Creek Water System across the county. As a local earthen irrigation channel, the Kilkenny Canal has no strong associations with notable events or early patterns of development important to water conveyance in Solano County nor broader settlement trends in Vacaville. As such, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the Kilkenny Canal does not share significant associations with the lives of persons important to history. No specific developmental agent of the Solano Water Council, SID, the Ulatis Project, or the Solano Project have important associations with this irrigation channel. Under NRHP/CRHR Criterion C/3, Kilkenny Canal is not a significant example of its type, style, or era. The subject property type is ubiquitous. It lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Finally, the Kilkenny Canal appears unlikely to be a contributor to a potential historic district. Although it forms part of the SID's local distribution system and delivers water locally from the Gibson Canyon Creek Water System, the Gibson Canyon Creek Water System was not developed as part of the Solano Project, and research lacks evidence this earthen water conveyance channel embodies an early or integral part of the SID, the

Solano Project, or the Ulatis Project's early development. As such, the subject property is not significant under NRHP/CRHR Criterion C/3 individually or as a contributor to an unidentified historic district. Under NRHP/CRHR Criterion D/4, the Kilkenny Canal has neither yielded nor is it likely to yield important information about our past. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, the Kilkenny Canal is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-22 and 7-23).

CB-23: Irrigation Channel Along N. Meridian Road

The Irrigation Channel at N. Meridian (subject property) is an earthen irrigation channel at the southeast boundary of the Vaca-Dixon Substation property north of I-80. The irrigation channel spans multiple parcels from the Gibson Canyon Creek Flood Control Channel near the southbound I-80 north to its intersection with an underground channel that connects with other SID water conveyance channels. Agricultural and utility uses surround the property.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the Irrigation Channel along N. Meridian Road does not have important associations with historic events, patterns, or trends of development. This earthen irrigation channel dates to c. 1962, during the period when the SID formed lease agreements with private landholders to efficiently distribute water from the Solano Project and the Gibson Canyon Creek Water System across the county. As a local earthen irrigation channel, the Irrigation Channel along N. Meridian Road has no strong associations with notable events or early patterns of development important to water conveyance in Solano County nor broader settlement trends in Vacaville. As such, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the Irrigation Channel along N. Meridian Road does not share significant associations with the lives of persons important to history. No specific developmental agent of the Solano Water Council, SID, Ulatis Project, or Solano Project have important associations with this irrigation channel. Under NRHP/CRHR Criterion C/3, the Irrigation Channel along N. Meridian Road is not a significant example of its type, style, or era. The subject property type is ubiquitous. It lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Finally, the Irrigation Channel along N. Meridian Road appears unlikely to be a contributor to a potential historic district. Although it forms part of the SID's local distribution system and delivers water locally from the Gibson Canyon Creek Water System, the Gibson Canyon Creek Water System was not developed as part of the Solano Project, and research lacks evidence this earthen water conveyance channel embodies an early or integral part of the SID, Solano Project, or Ulatis Project's early development. As such, the subject property is not significant under NRHP/CRHR Criterion C/3 individually or as a contributor to an unidentified historic district. Under NRHP/CRHR Criterion D/4, the Irrigation Channel along N. Meridian Road has neither yielded nor is it likely to yield important information about our past. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, the Irrigation Channel along N. Meridian Road is not individually eligible for listing in the NRHP and CRHR under any criteria (ICF 2025, page 7-27 to 7-29).

CB-24: Irrigation Channel West of Vaca-Dixon Substation

The Irrigation Channel West of Vaca-Dixon Substation (subject property) is an earthen irrigation channel along the western border of the Vaca-Dixon Substation. The subject property spans multiple parcels from the Gibson Canyon Creek Flood Control Channel north to Midway Road. Rural residential and utility uses surround the property.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the Irrigation Channel west of the Vaca-Dixon Substation does not have important associations with historic events, patterns, or trends of development. This earthen irrigation channel dates to c. 1962, during the period when the SID formed lease agreements with private landholders to efficiently distribute water from the Solano Project and the Gibson Canyon Creek Water System across the county. As a local earthen irrigation channel, the Irrigation Channel west of the Vaca-Dixon Substation has no strong associations with notable events or early patterns of development important to water conveyance in Solano County nor broader settlement trends in Vacaville. As such, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the Irrigation Channel west of the Vaca-Dixon Substation does not share significant associations with the lives of persons important to history. No specific developmental agent of the Solano Water Council, SID, Ulatis Project, or Solano Project have important associations with this irrigation channel. Under NRHP/CRHR Criterion C/3, the Irrigation Channel west of the Vaca-Dixon Substation is not a significant example of its type, style, or era. The subject property type is ubiquitous. It lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Finally, the Irrigation Channel west of the Vaca-Dixon Substation appears unlikely to be a contributor to a potential historic district. Although it forms part of the SID's local distribution system and delivers water locally from the Gibson Canyon Creek Water System, the Gibson Canyon Creek Water System was not developed as part of the Solano Project, and research lacks evidence this earthen water conveyance channel embodies an early or integral part of the SID, Solano Project, or Ulatis Project's early development. As such, the subject property is not significant under NRHP/CRHR Criterion C/3 individually or as a contributor to an unidentified historic district. Under NRHP/CRHR Criterion D/4, the Irrigation Channel west of the Vaca-Dixon Substation has neither yielded nor is it likely to yield important information about our past. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, the Irrigation Channel west of the Vaca-Dixon Substation is not individually eligible for listing in the NRHP or CRHR under any criteria (ICF 2025, page 7-29 and 7-30).

CB-25: Solano Irrigation District Lateral 4-D

The SID Irrigation Channel Lateral 4-D (subject property) is an unlined earthen irrigation channel, tying into SID's canal at its western boundary on the south side of I-

80. The subject property spans multiple parcels south and east of the Vaca-Dixon Substation east of Vacaville. The earthen irrigation channel spans 2.52 miles along an east–west alignment from I-80 to its intersection with Lewis Road before turning north. Agricultural and rural residential uses surround the irrigation channel. Concrete cross regulators, siphons, and large riprap appear at the channel's intersections with Byrnes, Willow, and Lewis roads, which regulate water flows along the channel and carry water below agricultural access roads.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the SID Irrigation Channel Lateral 4-D does not have important associations with historic events, patterns, or trends of development. This earthen irrigation channel dates to c. 1962, during the period when the SID formed lease agreements with private landholders to efficiently distribute water from the Solano Project and the Gibson Canyon Creek Water System across the county. As a local earthen irrigation channel, the SID Irrigation Channel Lateral 4-D has no strong associations with notable events or early patterns of development important to water conveyance in Solano County nor broader settlement trends in Vacaville. As such, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the SID Irrigation Channel Lateral 4-D does not share significant associations with the lives of persons important to history. No specific developmental agent of the Solano Water Council, SID, Ulatis Project, or Solano Project have important associations with this irrigation channel. Under NRHP/CRHR Criterion C/3, SID Irrigation Channel Lateral 4-D is not a significant example of its type, style, or era. The subject property type is ubiquitous. It lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Finally, the SID Irrigation Channel Lateral 4-D appears unlikely to be a contributor to a potential historic district. Although it forms part of the SID's local distribution system and delivers water locally from the Gibson Canyon Creek Water System, the Gibson Canyon Creek Water System was not developed as part of the Solano Project, and research lacks evidence this earthen water conveyance channel embodies an early or integral part of the SID, Solano Project, or Ulatis Project's early development. As such, the subject property is not significant under NRHP/CRHR Criterion C/3 individually or as a contributor to an unidentified historic district. Under NRHP/CRHR Criterion D/4, the SID Irrigation Channel Lateral 4-D has neither yielded nor is it likely to yield important information about our past. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, the SID Irrigation Channel Lateral 4-D is not individually eligible for listing in the NRHP or CRHR under any criteria (ICF 2025, page 7-25 to 7-27).

CB-26: Irrigation Channel East of Byrnes Road

The Irrigation Channel East of Byrnes Road (subject property) is an unlined earthen irrigation channel, tying into a private reservoir north of Weber Road and the Gibson Canyon Creek Flood Control Channel to the south. The earthen irrigation channel spans 0.34 miles from its intersection with a private parcel north of Weber Road to the Gibson Canyon Creek Flood Control Channel at its southern terminus. The channel has varying slopes along its trapezoidal shape with the channel south of Weber Road showing dense

vegetation. Two large cylindrical pipes route under Weber Road to convey water from the parcel north of Weber Road to the Gibson Canyon Creek Flood Control Channel to the south.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the Irrigation Channel East of Byrnes Road does not have important associations with historic events, patterns, or trends of development. This earthen irrigation channel dates to c. 1962, during the period when the SID formed lease agreements with private landholders to efficiently distribute water from the Solano Project and Gibson Canyon Creek Water System across the county. As a local earthen irrigation channel, the Irrigation Channel East of Byrnes Road has no strong associations with notable events or early patterns of development important to water conveyance in Solano County nor broader settlement trends in Vacaville. As such, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the Irrigation Channel East of Byrnes Road does not share significant associations with the lives of persons important to history. No specific developmental agent of the Solano Water Council, SID, Ulatis Project, or Solano Project have important associations with this irrigation channel. Under NRHP/CRHR Criterion C/3, the Irrigation Channel East of Byrnes Road is not a significant example of its type, style, or era. The subject property type is ubiquitous. It lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Finally, the Irrigation Channel East of Byrnes Road appears unlikely to be a contributor to a potential historic district. Although it forms part of the SID's local distribution system and delivers water locally from the Gibson Canyon Creek Water System, the Gibson Canyon Creek Water System was not developed as part of the Solano Project, and research lacks evidence this earthen water conveyance channel embodies an early or integral part of the SID, Solano Project, or Ulatis Project's early development. As such, the subject property is not significant under NRHP/CRHR Criterion C/3 individually or as a contributor to an unidentified historic district. Under NRHP/CRHR Criterion D/4, the Irrigation Channel East of Byrnes Road has neither yielded nor is it likely to yield important information about our past. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, the Irrigation Channel East of Byrnes Road is not individually eligible for listing in the NRHP or CRHR under any criteria (ICF 2025, page 7-32 to 7-34).

CB-27: Irrigation Channel at Mills Lane

The Irrigation Channel at Mills Lane (subject property) is a concrete and earthen irrigation channel at the northern end of Mills Lane. The subject property spans multiple parcels from Leisure Town Road at its western boundary to the Gibson Canyon Creek Flood Control Channel to its east, west of the Vaca-Dixon Substation in Vacaville, California. The visible irrigation channel spans 0.5 mile along an east–west alignment.

Eligibility Summary. Under NRHP/CRHR Criterion A/1, the Irrigation Channel at Mills Lane does not have important associations with historic events, patterns, or trends of development. This earthen irrigation channel dates to c. 1962, during the period when

the SID formed lease agreements with private landholders to efficiently distribute water from the Solano Project and Gibson Canyon Creek Water System across the county. As a local earthen irrigation channel, the Irrigation Channel at Mills Lane has no strong associations with notable events or early patterns of development important to water conveyance in Solano County nor broader settlement trends in Vacaville. As such, the subject property is not significant under NRHP/CRHR Criterion A/1. Under NRHP/CRHR Criterion B/2, the Irrigation Channel at Mills Lane does not share significant associations with the lives of persons important to history. No specific developmental agent of the Solano Water Council, SID, Ulatis Project, or Solano Project have important associations with this irrigation channel. Under NRHP/CRHR Criterion C/3, the Irrigation Channel at Mills Lane is not a significant example of its type, style, or era. The subject property type is ubiquitous. It lacks high artistic value, and is not the work of a master architect, builder, designer, or engineer. Finally, the Irrigation Channel at Mills Lane appears unlikely to be a contributor to a potential historic district. Although it forms part of the SID's local distribution system and delivers water locally from the Gibson Canyon Creek Water System, the Gibson Canyon Creek Water System was not developed as part of the Solano Project, and research lacks evidence this earthen water conveyance channel embodies an early or integral part of the SID, Solano Project, or Ulatis Project's early development. As such, the subject property is not significant under NRHP/CRHR Criterion C/3 individually or as a contributor to an unidentified historic district. Under NRHP/CRHR Criterion D/4, the Irrigation Channel at Mills Lane has neither yielded nor is it likely to yield important information about our past. The subject property is not significant under NRHP/CRHR Criterion D/4.

In conclusion, the Irrigation Channel at Mills Lane is not individually eligible for listing in the NRHP or CRHR under any criteria (ICF 2025, page 7-30 to 7-32).

Buried Archaeological Site Sensitivity Analysis Findings

No archaeological resources have been identified within the proposed project site. As a means of developing a better understanding for the finding of buried archaeological resources during construction and maintenance, the applicant's consultant reviewed various databases. According to the U.S. Department of Agriculture soil survey data, four soil units were mapped in the Study Area consisting of Capay clay (Cc), Clear Lake clay (CeA), San Ysidro sandy loam (SfA, SeA), and Yolo loam (Yr; USDA 2024). According to geologic maps of California, the Project would be situated in landforms consisting of quaternary nonmarine sediments formed by inland swamps or possibly alluvial deposition (Bailey 1966). Located in the Great Valley geomorphic province, the Project is on an alluvial plain where sediment has been continuously deposited since the Jurassic period (between 200 and 140 million years old; California Geological Survey 2002). Maps identifying depositional landforms and buried archaeological potential for District 4 of the California Department of Transportation (Caltrans) (Meyer and Rosenthal 2007) identify the older alluvium soils in the Project Study Area as dating from the Holocene (11,800 to 150 years). The combination of the analysis from Meyer and Rosenthal (2007), soil survey data (USDA 2024) and the geologic maps, as well as seasonal waterways depicted on older topographic maps indicates that the potential for

encountering buried archaeological deposits in the project site to be low to moderate (ICF 2025, page 6-6).

Tribal Cultural Resources

To date, no tribal cultural resources have been identified within the proposed project site or the project area of analysis (PAA) by the applicant's cultural resource consultant or the CEC staff tribal consultation. The results of the records search identified 37 previous cultural resources studies and six previously recorded cultural resources occurred within the project site or within a 1-mile radius of the project site. This includes tribal cultural resources (TCRs) listed or eligible for listing in the CRHR or a local register of historical resources. The SLF results from the NAHC came back with negative results. However, archaeological deposits that qualify as TCRs could be encountered during project-related ground-disturbing activities due to the fact that the buried archaeological site sensitivity analysis indicates that the potential for encountering buried archaeological deposits in the project site is low to moderate. Such resources could be eligible for listing in the CRHR or a local register of historical resources, or the lead agency, in its discretion and supported by substantial evidence, could determine the resources to be significant pursuant to the criteria set forth in subdivision (c) of the Public Resources Code, Section 5024.1.

Thresholds of Significance for Historical Resources

For a cultural resource to be a historical resource and thus subject to the requirements of CEQA, it must meet one of the four criteria for listing in the CRHR. The significance criteria listed below are used to determine whether a project or alternatives would result in significant impacts under CEQA related to cultural resources. These criteria are from CEQA Appendix G. Under CEQA, the proposed project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource, an archeological resource, or a tribal cultural resource as defined under the California Code of Regulations, title 14, Section 15064.5.

5.4.2.2 Direct and Indirect Impacts

Criteria for determining if a proposed project would have a significant impact on an identified historical resource is whether the project would alter the physical integrity of the historical resource in an adverse manner such that it would no longer be eligible to the NRHP, the CRHR, or any other local landmark programs. Under CEQA, the proposed project would cause a significant impact if it caused a substantial adverse change in the significance of a historical resource, an archeological resource, or a tribal cultural resource as defined in Public Resources Code § 21084.1 and further implemented by California Code of Regulations, title 14, Chapter 3, section 15064.5.

The proposed project would have a significant impact on these cultural resources if it would:

- Physically alter, damage, or cause destruction of all or a part of a historical or archaeological resource.

Demolish or materially alter in an adverse manner those physical characteristics of a historical resource that convey its significance and that justify its inclusion in, or eligibility for, inclusion in the California Register of Historical Resources, inclusion in a local register of historical resources, or its determination to be a historical resource by a CEQA lead agency.

Demolish or materially alter in an adverse manner those physical characteristics of an archaeological artifact, site, or object that enable it to meet the definition of a unique archaeological resource under CEQA.

Disturb any human remains, including those interred outside of formal cemeteries.

Direct and indirect impacts to significant Historical Resources are considered herein as follows.

- Direct or primary impacts are caused by the project and occur at the same time and place (California Code Regulations, title 14, § 15358 (a)(1))
- Indirect impacts, or secondary effects, are reasonably foreseeable and caused by a project but occur at a different time or place (California Code Regulations, title 14, § 15358 (a)(2))

a. Would the proposed project cause a substantial adverse change in the significance of a historical resource pursuant to Public Resources Code, section 15064.5?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, with incorporation of CEC staff proposed Conditions of Certification (COCs) **CUL-1** through **CUL-8** the proposed project would not cause a substantial adverse change in the significance of a historical resource that could not be mitigated.

Jurisdictional Project Components

As described above, no known archaeological resources eligible or listed on the CRHR or local listing have been identified within the archaeological PAA for jurisdictional project components. One CRHR eligible built environment resource, the Catherine Kilkenny Residence located at 5310 Kilkenny Road, is located in the built environment PAA. The Catherine Kilkenny Residence would be temporarily visually impacted during construction and there is potential for long-term visual impacts. The construction activity and subsequent facility would be in direct line of sight of the historic residence further degrading the original setting. Implementation of COC **CUL-7**, which requires the development of a visual screening plan would reduce visual impacts to a less-than-significant level.

As described above, no archaeological resources have been identified within the proposed project footprint or along the proposed new buried and above-ground transmission lines connecting to existing PG&E facilities. Therefore, the proposed

project will not impact known archaeological resources. However, in accordance with the previous Buried Archaeological Site Sensitivity Analysis, there is a low to moderate potential for encountering buried archaeological deposits that meet the definition of a historical resource under CEQA within the project site. If buried historical resources are damaged during construction, it would be considered a significant impact. Implementation of COCs **CUL-1** through **CUL-6**, would reduce impacts to unknown historical resources to a less than significant level.

Non-Jurisdictional Project Components

Less Than Significant Impact with Mitigation Incorporated. No known archaeological resources eligible or listed on the CRHR or local listing have been identified within the archaeological PAA for non-jurisdictional project components. Two CRHR-eligible built environment resources are non-jurisdictional. These are the PG&E Vaca-Dixon Historic District (P-48-002041) and the Vaca-Peabody 230-kV Transmission Line. PG&E has determined that their work would be 500 meters east of the Historic District and there would be no impacts to the district. If buried historical resources are damaged during construction, it would be considered a significant impact. Therefore, staff recommends implementation of mitigation measures (MMs) **CUL-1** through **CUL-5** to reduce impacts to unknown historical resources to a less than significant level.

Operation

No Impact. Ground-disturbing activities and the building of new structures do not appear to be part of the standard operational or maintenance profile of the proposed project. Impacts on historical resources are therefore not expectable during normal operation and maintenance.

b. Would the proposed project cause a substantial adverse change in the significance of a unique archaeological resource pursuant to Public Resources Code, section 15064.5?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, the proposed project would not cause a substantial adverse change in the significance of a unique archaeological resource that could not be mitigated with incorporation of staff proposed COCs.

Jurisdictional Project Components

As described above, no unique archaeological resources have been identified within the proposed project footprint or along the proposed new buried and above-ground transmission lines connecting to existing PG&E facilities. Therefore, the proposed project will not impact known unique archaeological resources.

However, in accordance with the previous Buried Archaeological Site Sensitivity Analysis, there is a low to moderate potential for encountering buried archaeological

deposits that meet the definition of a unique archaeological resource under CEQA within the project site. If buried unique archaeological resources are damaged during construction, it would be considered a significant impact. Staff propose, therefore, implementation of COCs **CUL-1** through **CUL-6**, in coordination with the CEC's CPM to reduce impacts to unknown historical resources to a less than significant level with mitigation incorporated.

Non-Jurisdictional Project Components

No unique archaeological resources have been identified in non-jurisdictional project components, however if buried unique archaeological resources are damaged during construction, it would be considered a significant impact. Staff propose, therefore, implementation of **MMs CUL-1** through **CUL-5** to reduce impacts to unknown historical resources to a less than significant level.

Operation

No Impact. As described in **Section 3, Project Description**, operations and maintenance activities would include performing routine visual inspections, executing minor repairs and responding to needs for plant adjustment. On intermittent occasions, additional workers may be required for repairs or replacement of equipment or other specialized maintenance. In addition, approximately every 2 to 3 years the facility would require battery augmentation to maintain project capacity. The proposed project does not include ground-disturbing activities as part of anticipated operations and maintenance activities nor does it include the building of new structures once the facility is operational. Therefore no impacts on unique archaeological resources would result during routine operation and maintenance.

c. Would the proposed project disturb any human remains, including those interred outside of dedicated cemeteries?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below and with incorporation of staff proposed COCs, impacts associated with potential project disturbance to human remains would be less than significant.

Jurisdictional Project Components

As described above, no known human remains, or burial grounds have been identified within the proposed project site. However, it is possible that the ground disturbance proposed for construction could impact unknown human remains, which would constitute a significant impact without mitigation. CEC Staff recommends implementation of COCs **CUL-1** through **CUL-6**, in coordination with the CEC's CPM. With implementation of COCs **CUL-1** through **CUL-6**, impacts to unknown buried,

human remains would be reduced to a less than significant level with mitigation incorporated.

Non-Jurisdictional Project Components

No human remains or burial grounds have been identified within non-jurisdictional project components; however, it is possible that the ground disturbance proposed for construction could impact unknown human remains, which would constitute a significant impact, unless mitigated. CEC Staff recommends implementation of **MMs CUL-1** through **CUL-5**. With implementation of **MMs CUL-1** through **CUL-5**, impacts to unknown buried, human remains would be reduced to a less than significant level.

Operation

No Impact. Ground-disturbing activities and the building of new structures are not part of the standard operational or maintenance activities for the proposed project. Therefore, impacts on human remains, including those interred outside of dedicated cemeteries, are not anticipated as part of routine operation and maintenance activities.

d. Would the proposed project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code, section 21074 as either a site, feature, place, cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:

i. Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code, section 5020.1(k), or

Construction

No Impact. Based on the analysis below, the proposed project would not cause a substantial adverse change in the significance of a tribal cultural resource that is listed or eligible for listing in the CRHR since there are no eligible resources.

Jurisdictional Project Components

Based on the information provided during formal tribal consultation, background research, and record searches, project construction would have no impact on known tribal cultural resources listed or eligible for listing in the CRHR. No significant archaeological resources have been identified within the proposed project site or along the proposed new buried and above-ground transmission lines connecting to existing PG&E facilities.

Non-Jurisdictional Project Components

Based on the information provided during formal tribal consultation, background research, and record searches, project construction would have no impact on tribal

cultural resources listed or eligible for listing in the CRHR. No significant archaeological resources have been identified within the non-jurisdictional project components. Thus, there is no impact to any tribal cultural resources that are listed or eligible for listing in the CRHR.

Operation

No Impact. Ground-disturbing activities and the building of new structures are not part of the standard operational or maintenance activities for the proposed project. Therefore, no impacts on a known tribal cultural resource that is listed or eligible for listing in the CRHR during routine operation and maintenance activities would occur.

ii. A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code, section 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code, section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.

Construction

Less Than Significant Impact with Mitigation Incorporated. As analyzed below, based on the information provided during formal tribal consultation, background research, and record searches, project construction would have a less than significant impact on tribal cultural resources with implementation of COCs, **CUL-1** through **CUL-6**.

Jurisdictional Project Components

No significant archaeological resources have been identified within the proposed project site including the proposed new buried and above-ground transmission lines connecting to existing PG&E facilities. Therefore, no known resources would be impacted. However, the Buried Archaeological Site Sensitivity Analysis suggests that there is a low to moderate potential for encountering buried archaeological deposits within the project site that CEC could determine to be a tribal cultural resource in consultation with local tribes.

Therefore, CEC staff proposes COCs, **CUL-1** through **CUL-6**, in coordination with the CEC's CPM. With implementation of COCs **CUL-1** through **CUL-6**, impacts to tribal cultural resources would be reduced to a less than significant level.

Non-Jurisdictional Project Components

No significant archaeological resources have been identified within non-jurisdictional project components; therefore, no known resources would be impacted. However, the previous Buried Archaeological Site Sensitivity Analysis suggests that there is a low to moderate potential for encountering buried archaeological deposits that CEC could determine to be a tribal cultural resource in consultation with local tribes. Therefore,

CEC staff proposes **MMs CUL-1** through **CUL-5**. With implementation of **MMs CUL-1** through **CUL-5**, impacts to tribal cultural resources would be reduced to a less than significant level with mitigation incorporated.

Operation

No Impact. Ground-disturbing activities and the building of new structures are not part of routine operational or maintenance activities for the proposed project. Impacts to tribal cultural resources determined by a lead agency to be significant are therefore not anticipated during normal operation and maintenance.

5.4.2.3 Cumulative Impacts

Cumulative impacts of the project must be discussed if the incremental effect of the project, combined with the effects of other projects is "cumulatively considerable" (California Code Regulations, title 14, § 15130[a]).

In accordance with CEQA Guidelines, section 15130(b), "...the discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as much detail as is provided for the effects attributable to the project alone. The discussion should be guided by standards of practicality and reasonableness and should focus on the cumulative impact to which the identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact." (California Code Regulations, title 14, § 15130[b]).

"Where a lead agency is examining a project with an incremental effect that is not 'cumulatively considerable,' a lead agency need not consider that effect significant but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable." (California Code Regulations, title 14, § 15130[a]).

Construction

Less Than Significant Impact with Mitigation Incorporated. There is a possibility that there might be impacts to an unknown resource or unanticipated impacts to a known resource for the cumulative projects. Therefore, staff proposes COCs and MMs to reduce project-specific impacts to less than significant.

Jurisdictional and Non-Jurisdictional Components

Of the 156 projects identified in the cumulative setting section within 7 miles of the project, 106 have found no significant impacts to cultural or tribal cultural resources, while 45 are still under environmental review or proposed and their impact conclusions remain pending. four projects are on hold, and one has been withdrawn. Despite this, there is always a possibility that there might be impacts to an unknown resource or unanticipated impacts to a known resource. State law requires specific steps to occur in the case of unanticipated discovery of cultural resources or the identification of human remains. As explained earlier in this document, implementation of COCs **CUL-1** through **CUL-8** and **MMs CUL-1** through **CUL-5** would reduce any project-specific

impacts. CEC has concluded that these COCs are sufficient to reduce impacts, and the proposed project would not contribute to a cumulatively considerable impact.

Operation

No Impact. Ground-disturbing activities are not part of the identified routine operational and maintenance activities for the jurisdictional and non-jurisdictional components, thus no cumulative impacts are anticipated.

Jurisdictional and Non-Jurisdictional Components

With no ground disturbance during operations of the jurisdictional project components, no cumulative impacts are anticipated.

5.4.3 Project Conformance with Applicable LORS

No federal regulations apply to this proposed project, although various state and local Laws, ordinances and regulations (LORS) do apply. These are discussed in the 2024 Corby BESS Opt-in Application Volume 1 Part 1 (TT 2024a, page 4.5-38 to 4.5-42).

Table 5.4-6 below details CEC staff's determination of conformance with applicable LORS including any proposed COCs, where applicable, to ensure the project jurisdictional components would conform with LORS. As shown in this table, CEC staff conclude that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.4-6 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
State	
California Register of Historical Resources (Public Resources Code, § 5024.1)	
Establishes criteria for listing a cultural resource as a historical resource.	**Yes.** One known historical resource, the Catherine Kilkenny Residence, could be impacted by the jurisdictional project components within the PAA. COC **CUL-7** would establish the development of appropriate measures to mitigate adverse visual change. There is also a possibility that undocumented cultural resources or tribal cultural resources might be discovered during construction within jurisdictional and non-jurisdictional boundaries. COCs **CUL-1** through **CUL-6** would establish adequate staffing and procedures to follow to evaluate any discovery.
California Health and Safety Code, § 7050.5	
In the event of discovery of human remains, requires work to be halted and the coroner be notified. The coroner then must notify the NAHC if the remains are Native American in origin.	**Yes.** While this code is applicable, there are no human remains identified within the project PAA or within jurisdictional and non-jurisdictional project boundaries. Despite this, there is a possibility, albeit remote, that human remains may be identified during construction. COCs **CUL-1** through **CUL-6** would establish adequate staffing

TABLE 5.4-6 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	and procedures to follow in the event of a discovery.
Public Resources Code, § 5097.98	
In the event human remains are discovered, authorizes the NAHC to assign a Most Likely Descendant (MLD) who is authorized to make recommendations for the treatment of the remains.	**Yes.** While this code is applicable, there are no known human remains identified within the project PAA or within jurisdictional and non-jurisdictional project boundaries. Despite this, there is a possibility, albeit remote, that human remains may be identified during construction. COCs **CUL-1** through **CUL-6** would establish adequate staffing and procedures to follow in the event of a discovery.
Assembly Bill 205 Opt-In Regulations	
Provide specific information regarding cultural resources and tribal cultural resources as part of the application process.	**Yes.** This information has been provided during the application process.
Solano County General Plan	
The Solano County General Plan Open Space Element includes "protecting archaeological sites and historically or culturally important sites" in the topic area of Cultural Resources (Solano County 2008, Chapter 4 Resources, RS-3, RS-41 to RS-46). The following policies pertain to cultural and tribal cultural resources: Policy RS.P-38: Identify and preserve important prehistoric and historic structures, features, and communities. Policy RS.P-40: Consult with Native American governments to identify and consider Native American cultural places in land use planning. Program RS.I-25: Require cultural resources inventories of all new development projects in areas identified with medium or high potential for archeological or cultural resources. Where a preliminary site survey finds medium to high potential for substantial archaeological remains, the County shall require a mitigation plan to protect the resource before issuance of permits. Mitigation options are presented.	**Yes.** One known historical resource, the Catherine Kilkenny Residence, could be impacted by jurisdictional project components within the PAA. COC **CUL-7** would establish the development of appropriate measures to mitigate adverse visual change. There is also a possibility that undocumented cultural resources or tribal cultural resources might be discovered during construction within jurisdictional and non-jurisdictional project boundaries. COCs **CUL-1** through **CUL-6** would establish adequate staffing and procedures to follow to evaluate any discovery. Two CRHR eligible built environment resources are non-jurisdictional. These resources shall be addressed through separate compliance studies.
City of Vacaville General Plan	
The Vacaville General Plan addresses cultural resources in the Conservation and Open Space Element (City of Vacaville 2015, Chapter 4, COS-20 to COS). The following goals and policies pertain to cultural and tribal cultural resources under (COS-22 to COS-23):	**Yes.** One known historical resource, the Catherine Kilkenny Residence, could be impacted by the project within the PAA. COC **CUL-7** would establish the development of appropriate measures to mitigate adverse visual change. There is also a possibility that undocumented cultural resources or tribal cultural resources might be discovered during construction within jurisdictional and non-

TABLE 5.4-6 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Goal COS-6: Protect and enhance cultural resources for their aesthetic, scientific, educational, and cultural values. Policy COS-P6.2: Require that a records search of the California Historical Resources Information System be conducted and reviewed by a cultural resources professional for proposed development areas to determine whether the site contains known prehistoric or historic cultural resources and the potential for as-yet-undiscovered cultural resources. Policy COS-P6.4: Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented. Policy COS-P6.5: Require that any archaeological or paleontological resources on a development project site be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure, unless the City identifies superior mitigation. If resources are documented, coordinate with descendants and/or stakeholder groups, as warranted. Policy COS-P6.6: Treat human remains discovered during implementation of public and private projects within the city with respect and dignity.	jurisdictional project boundaries. COCs **CUL-1** through **CUL-6** would establish adequate staffing and procedures to follow to evaluate any discovery. Two CRHR eligible built environment resources are non-jurisdictional. These resources shall be addressed through separate compliance studies.

Solano County General Plan – Chapter 4: Resources (RS) and Policy (P) and Implementation Program (I).
City of Vacaville General Plan – Conservation and Open Space Element (COS) and Policy (P).

5.4.4 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to cultural and tribal cultural resources and would conform with applicable state and local LORS. Staff recommends adopting the conditions of certification as detailed in subsection “5.4.5 Proposed Conditions of Certification” below. The COCs below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

5.4.5 Proposed Conditions of Certification

The following proposed COCs incorporate proposed mitigation measures in the 2024 Corby BESS Opt-in Application Volume 1 Part 1 (TT 2024a, page 4.5-35 to 4.5-38) as

well as standard CEC measures to mitigate environmental impacts and ensure conformance with applicable local LORS to the extent possible. Prior to and throughout construction in implementing the following COCs, the Applicant shall communicate as directed below with the CEC's CPM.

CUL-1 Appointment and Qualifications of Cultural Resource Personnel The project owner shall assign a Cultural Resource Specialist (CRS) to the project. The project owner may elect to assign one or more alternate CRSs as well. The project owner shall submit the resumes of the proposed CRS and Alternative CRS(s), with at least three references and their contact information, to the CEC's Compliance Project Manager (CPM) for review and approval.

The CRS and Alternate CRS(s) shall have training and background that conform to the U.S. Secretary of the Interior's Professional Qualifications Standards, as published in Code of Federal Regulations, title 36, part 61. In addition, the CRS and Alternate CRS(s) shall have the following qualifications:

A background in anthropology, archaeology, history, architectural history, or a related field, and

- At least 10 years of archaeological or historical experience (as appropriate for the project site), with resources mitigation and fieldwork;
- At least one year of field experience in California; and
- At least three years of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The project owner may replace the CRS by submitting the required resume, references and contact information of the proposed replacement CRS to the CPM.

The CRS shall manage all cultural resource monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resource activities, unless management of these is otherwise provided for in accordance with the cultural resource and tribal cultural resource COCs. The CRS shall serve as the primary point of contact on all cultural resource matters for the CEC. The CRS shall retain Native American Monitors and may elect to obtain the services of Cultural Resource Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the CEQA significance of any cultural or tribal cultural resources that are newly discovered or that may be affected in an unanticipated manner. After all ground disturbances are completed and the CRS has fulfilled all responsibilities specified in these cultural and tribal cultural resource COCs, the project owner may discharge the CRS after receiving approval from the CPM.

If required, CRMs shall have any of the following qualifications:

- B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field; and one year of archaeological field experience in California.
- A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years of archaeological field experience in California.
- Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of archaeological field experience in California.

If tribal monitor(s) become necessary, hiring preference should be given to consulting Native American tribes and the monitors should have:

- Traditional ties to the area being monitored.
- Knowledge of local historic and prehistoric Native American tribal cultural resources.
- Knowledge and understanding of Health and Safety Code, section 7050.5, and Public Resources Code, section 5097.9 et seq.
- Ability to effectively communicate the requirements of Health and Safety Code, section 7050.5, and Public Resources Code, section 5097.9 et seq.
- Ability to work with law enforcement officials and the Native American Heritage Commission (NAHC) to ensure the return of all associated grave goods taken from a Native American grave during excavation.
- Ability to travel to proposed project sites within traditional tribal territory.
- Knowledge and understanding of California Code of Regulations, title 14, section 15064.5.
- Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding of CEQA mitigation provisions.
- Ability to read a topographical map and be able to locate site and reburial locations for future inclusions in the NAHC's Sacred Lands Inventory.
- Knowledge and understanding of archaeological practices, including the phases of archaeological investigation.

Verification: The project owner shall submit the prospective CRS's and any Alternate CRS's qualifications at least 75 days prior to the start of ground disturbance associated with site mobilization and construction.

The project owner may replace a CRS by submitting the required resume, references and contact information to the CPM at least 10 working days prior to the termination or release of the then-current CRS. In an emergency, the project owner shall immediately notify the CPM to discuss the qualifications and approval

of a short-term replacement while a permanent CRS is proposed to the CPM for consideration.

At least 20 days prior to site mobilization, the CRS shall provide proof of qualifications for any anticipated CRMs and additional specialists for the project to the CPM.

Within 20 days prior to site mobilization, the CRS shall provide proof that Native American Monitors have been employed and identifying the Native American Monitors.

CUL-2 Cultural and Tribal Cultural Resources Mitigation and Monitoring Plan

Prior to the start of ground disturbance, the project owner shall submit the Cultural and Tribal Cultural Resources Mitigation and Monitoring Plan (CTRMMP), as prepared by or under the direction of the CRS, to the CPM for review and approval. The CTRMMP shall follow the content and organization of the draft model CTRMMP, provided by the CPM, and the authors' name(s) shall appear on the title page of the CTRMMP. The CTRMMP shall identify measures to minimize potential impacts on cultural and tribal cultural resources. The project owner and CRS shall ensure implementation of the CTRMMP. Copies of the CTRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. No ground disturbance shall occur prior to CPM approval of the CTRMMP, unless such activities are specifically approved by the CPM. Portions of the CTRMMP that describe or map the location(s) of cultural and tribal cultural resources shall be designated as confidential.

The CTRMMP shall include the following elements and measures.

- The following statement included in the Introduction: "Any discussion, summary, or paraphrasing of the Conditions of Certification (COCs) in this CTRMMP is intended as general guidance and as an aid to the user in understanding the COCs and their implementation. The COCs, as written shall supersede any summarization, description, or interpretation of the conditions in the CTRMMP."
- A proposed general research design that includes a discussion of cultural research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any cultural or tribal cultural resource is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any historical resources, unique archaeological resources, or tribal cultural resources (as defined in the California Environmental Quality Act and determined by the CPM). A prescriptive treatment plan may be included in the CTRMMP for limited data types. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-

related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project.

- Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.
- A description of how Native American Monitors or observers will be included, the procedures to be used to select them, and their role and responsibilities.
- A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to cultural or tribal cultural resources that are to be avoided during ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects. A statement that all encountered cultural and tribal cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms and mapped and photographed. In addition, all archaeological materials retained during archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's (SHRC's) Guidelines for the Curation of Archaeological Collections (1993, or future updated guidelines from the SHRC), into a retrievable storage collection in a public repository or museum.
- A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural and tribal cultural resource investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept archaeological materials resulting from project activities.
- A statement demonstrating when and how the project owner will comply with Health and Human Safety Code, section 7050.5(b), and Public Resources Code, section 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the NAHC of the discovery of human remains.
- A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any archaeological materials that are encountered during ground disturbance and cannot be treated prescriptively.
- A description of the contents, format, and review and approval process of a final Cultural and Tribal Cultural Resources Report (CTRR), if resources are encountered, which shall be prepared according to Archaeological Resource Management Report (ARMR) guidelines.

Verification: Upon approval of the CRS proposed by the project owner, the CPM will provide the project owner with an electronic copy of the draft model CTRMMP for the CRS.

At least 90 days prior to the start of ground disturbance, the project owner shall submit the CTRMMP to the CPM for review and approval. The CPM must approve the CTRMMP before construction can begin.

At least 30 days prior to the start of ground disturbance, in a letter to the CPM, the project owner shall agree to pay curation fees for any materials generated or collected during archaeological investigations (survey, testing, data recovery).

Within 90 days after completion of ground disturbance (including landscaping), if archaeological materials requiring curation were generated or collected, the project owner shall provide to the CPM a copy of an agreement with, or other written commitment from, a curation facility that meets the standards stated in the SHRC's Guidelines for the Curation of Archaeological Collections (1993, or future updated guidelines from SHRC), to accept the archaeological materials from this project. Any agreements concerning curation will be retained and available for audit for the life of the project.

CUL-3 Worker Environmental Awareness Program (WEAP) Prior to and for the duration of ground disturbance, the project owner shall provide WEAP training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The cultural and tribal cultural resources part of this training shall be prepared by the CRS, may be conducted by any member of the cultural and tribal cultural resources team, and may be presented in the form of a video. The CRS shall collaborate with any consulting California Native American tribal members if requested by a tribe in preparing and presenting the training. During the training and during construction, the CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

- A discussion of applicable laws and penalties under law;
- Samples or visuals of artifacts that might be found in the project vicinity;
- A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
- A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;

- Instruction that the CRS, Alternate CRS, and CRMs have the authority to halt ground disturbance around a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
- Instruction that employees, if the CRS, Alternate CRS, or CRMs are not present, are to halt work on their own in the vicinity of a potential cultural or tribal cultural resource discovery, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
- An informational brochure that identifies reporting procedures in the event of a discovery;
- An acknowledgement form signed by each worker indicating that they have received the training; and
- A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program unless such activities are specifically approved by the CPM.

Verification: At least 30 days prior to the beginning of ground disturbance, the CRS shall provide the draft text and/or training video for the cultural and tribal cultural resources WEAP with graphics and the informational brochure to the CPM for review and approval.

At least 15 days prior to the beginning of ground disturbance, the CPM will provide to the project owner a WEAP Training Acknowledgement form for each WEAP-trained worker to sign.

Monthly, until ground disturbance is completed, the project owner shall provide in the Monthly Compliance Report the WEAP Training Acknowledgement forms of workers who have completed the training in the prior month and a running total of all persons who have completed training to date.

CUL-4 Archaeological Monitoring The CRS or an assigned Archaeological monitor(s) working under the direction of the CRS shall visit the site prior to construction and once every two weeks during construction or at the discretion of the CRS when ground-disturbance moves to a new location. During monitoring visits, the monitors shall examine the work areas for the presence of precontact artifacts (e.g., chipped stone tools and production debris, stone milling tools, ceramics), historic-period debris (e.g., metal, glass, ceramics), and/or soil discoloration that might indicate the presence of a cultural midden.

The archaeological monitor shall have the authority to halt and redirect work in the event of a discovery. If archaeological resources are encountered during ground-disturbing activities, work in the immediate area shall be halted and/or

redirected, and the find evaluated for listing in the California Register of Historical Resources (CRHR). Should an unanticipated resource be found as CRHR eligible and avoidance is infeasible, additional analysis (e.g., testing) may be necessary to determine if Project impacts would be significant.

Archaeological monitoring may be expanded at the discretion of the CRS in consultation with the lead agency, as warranted by conditions such as encountering unanticipated cultural resources and/or tribal cultural resources.

Verification: Prior to signing a contract with a qualified archaeological specialists and Native American monitor(s), the Applicant shall provide a copy of the scope of work to the CEC's compliance proposed project manager (CPM) for review, including the qualification of the proposed monitors, proposed number of monitors to be employed, proposed construction schedule/hours during which monitors would be present on site, and other relevant details of the proposed cultural monitoring program for approval.

CUL-5 Unanticipated Discovery of Cultural Resources In the event archaeological resources are unexpectedly encountered during ground-disturbing activities, work within 50 feet of the find shall halt and the CRS be contacted immediately to evaluate the resource. Procedures laid out in the CTCRMMP shall be followed. These may include testing, excavation, and monitoring of the rest of construction. If the resource is determined by the CRS to be precontact, then representatives from interested Native American tribes shall also be contacted to participate in the evaluation of the resource. If the resource proves to be eligible for the CRHR and significant impacts to the resource cannot be avoided via Project redesign, the CRS shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, per the requirements of the California Code of Regulations, title 14, section 15126.4(b)(3)(C). The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to cultural resources related to the resource. Pursuant to the data recovery plan, the CRS and Native American representative, as appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. The lead agency shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional repository of the California Historical Resources Information System, per California Code of Regulations, title 14, section 15126.4(b)(3)(C).

Verification: The CRS shall contact the CPM within 48 hours of any unanticipated discovery. The discovery will be recorded and documented in accordance with the CTCRMMP.

CUL-6 Discovery of Human Remains In the event human remains are uncovered during ground-disturbing activities (including construction, operations and

maintenance, and decommissioning), the applicant or its contractor shall immediately halt work within a 100-foot radius, contact the Solano County Coroner to evaluate the remains, and follow the procedures and protocols pursuant to the California Code of Regulations, title 14, section 15064.5(e)(1). The Health and Safety Code, section 7050.5, requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to the Public Resources Code, section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the NAHC. The NAHC will then identify the most likely descendant of the deceased Native American. The most likely descendant will make recommendations for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

Verification: Should human remains be discovered, the archaeological specialist and Native American Monitor(s) shall comply with state law. The archaeological specialist shall notify CPM within 24 hours of the discovery and invite CEC's participation in the resolution of the find.

CUL-7 Catherine Kilkenny Residence Visual Screening Plan Prior to construction, the applicant shall develop a plan to visually screen the CRHR-eligible Catherine Kilkenny Residence, located at 5310 Kilkenny Road. The visual screening plan shall be developed as part of the vegetative landscape screening plan outlined in COC **VIS-2**. In addition to the guidance from **VIS-2** the plan shall include screening to a height sufficient to block sight lines from the Catherine Kilkenny Residence. This will be aided by using already mature trees and bushes to avoid a lengthy growth period before the installed screening becomes effective. In addition, all electrical tie-lines running east-west parallel to Kilkenny Road in the vicinity of the Catherine Kilkenny Residence shall be buried to avoid visual impacts.

Verification: The project owner shall submit a vegetative landscape screening plan to the CPM for review and approval ninety (90) days prior to executing a contract to purchase landscaping-related improvements for the project as outlined in COC **VIS-2**. The plan shall include the goal of reducing visual impacts on the CRHR-eligible Catherine Kilkenny Residence to a level that is less than significant with mitigation incorporated. The project owner or applicant will provide documentation via a final report or photographs of the screening within 30 days of installation.

CUL-8 Final Cultural and Tribal Cultural Resources Report (CTCRR) The project owner shall submit the final CTCRR to the CPM for approval. The final CTCRR shall be written by or under the direction of the CRS and shall be provided in the ARMR format. The final CTCRR shall report on all field activities including dates, times and locations, results, samplings, and analyses. All survey reports, DPR 523 forms, data recovery reports, and any additional research reports not

previously submitted to the California Historical Resources Information System (CHRIS) shall be included as appendices to the final CTCRR.

If the project owner requests a suspension of all construction activities for more than 30 days, then a draft CTCRR that covers all cultural and tribal cultural resources activities associated with the project shall be prepared by the CRS and submitted to the CPM for review and approval on the same day as the suspension/extension request. The draft CTCRR shall be retained at the project site in a secure facility until construction resumes or the project is withdrawn. If the project is withdrawn, then a final CTCRR shall be submitted to the CPM for review and approval at the same time as the withdrawal request.

Verification: Within 30 days after requesting a suspension of construction activities, the project owner shall submit a draft CTCRR to the CPM for review and approval.

After completion of all construction related ground disturbance (including landscaping) and 90 days prior to operation, the project owner shall submit the final CTCRR to the CPM for review and approval. If any reports have previously been sent to the CHRIS, then receipt letters from the CHRIS or other verification of receipt shall be included in an appendix.

Within 10 days after CPM approval of the CTCRR, the project owner shall provide documentation to the CPM confirming that copies of the final CTCRR have been provided to the CHRIS, the curating institution, if archaeological materials were collected, and to the tribal chairpersons of any California Native American tribes that request copies of project-related reports.

5.4.6 Recommended Mitigation Measures

During construction of non-jurisdictional project components, the following mitigation measures are recommended to be adopted by the agency with permitting authority over those components, which can and should adopt them, consistent with California Code of Regulations title 14, section 15091(a)(2): **MM CUL-1** through **MM CUL-6**.

MM CUL-1 Appointment and Qualifications of Cultural Resource Personnel

The project owner shall assign a Cultural Resource Specialist (CRS) to the project. The CRS or other members of the cultural resources team can be the same individuals outlined in COC **CUL-1**. The project owner may elect to assign one or more alternate CRSs as well. The CRS and Alternate CRS(s) shall have training and background that conform to the U.S. Secretary of the Interior's Professional Qualifications Standards, as published in Code of Federal Regulations, title 36, part 61. In addition, the CRS and Alternate CRS(s) shall have the following qualifications:

- A background in anthropology, archaeology, history, architectural history, or a related field, and

- At least 10 years of archaeological or historical experience (as appropriate for the project site), with resources mitigation and fieldwork;
- At least one year of field experience in California; and
- At least three years of experience in a decision-making capacity on cultural resources projects in California and the appropriate training and experience to knowledgably make recommendations regarding the significance of cultural resources.

The CRS shall manage all cultural resource monitoring, mitigation, curation, and reporting activities, and any pre-construction cultural resource activities, unless management of these is otherwise provided for in accordance with the cultural resource and tribal cultural resource MMs. The CRS shall serve as the primary point of contact on all cultural resource matters. The CRS shall retain Native American Monitors and may elect to obtain the services of Cultural Resource Monitors (CRMs) and other technical specialists, if needed, to assist in monitoring, mitigation, and curation activities. The project owner shall ensure that the CRS makes recommendations regarding the CEQA significance of any cultural or tribal cultural resources that are newly discovered or that may be affected in an unanticipated manner. After all ground disturbances are completed and the CRS has fulfilled all responsibilities specified in these cultural and tribal cultural resource MMs, the project owner may discharge the CRS.

If employed, CRMs shall have the following qualifications:

- B.S. or B.A. degree in anthropology, archaeology, historical archaeology, or a related field; and one year of archaeological field experience in California; or
- A.S. or A.A. degree in anthropology, archaeology, historical archaeology, or a related field, and four years of archaeological field experience in California; or
- Enrollment in upper division classes pursuing a degree in the fields of anthropology, archaeology, historical archaeology, or a related field, and two years of archaeological field experience in California.

If tribal monitor(s) become necessary hiring preference should be given to consulting Native American tribes and the monitors should have:

- Traditional ties to the area being monitored.
- Knowledge of local historic and prehistoric Native American tribal cultural resources.
- Knowledge and understanding of Health and Safety Code, section 7050.5, and Public Resources Code, section 5097.9 et seq.
- Ability to effectively communicate the requirements of Health and Safety Code, section 7050.5, and Public Resources Code, section 5097.9 et seq.

- Ability to work with law enforcement officials and the Native American Heritage Commission (NAHC) to ensure the return of all associated grave goods taken from a Native American grave during excavation.
- Ability to travel to proposed project sites within traditional tribal territory.
- Knowledge and understanding of California Code of Regulations, title 14, section 15064.5.
- Ability to advocate for the preservation in place of Native American cultural features through knowledge and understanding of CEQA mitigation provisions.
- Ability to read a topographical map and be able to locate site and reburial locations for future inclusions in the NAHC's Sacred Lands Inventory.
- Knowledge and understanding of archaeological practices, including the phases of archaeological investigation.

MM CUL-2 Cultural and Tribal Cultural Resources Mitigation and Monitoring Plan Prior to the start of ground disturbance, the CRS shall prepare a Cultural and Tribal Cultural Resources Mitigation and Monitoring Plan (CTRMMP). The CTRMMP can be the same plan outlined in COC **CUL-2**. The CTRMMP shall identify measures to minimize potential impacts on cultural and tribal cultural resources. Implementation of the CTRMMP shall be the responsibility of the CRS and the project owner. Copies of the CTRMMP shall reside with the CRS, alternate CRS, each CRM, and the project owner's on-site construction manager. Portions of the CTRMMP that describe or map the location(s) of cultural and tribal cultural resources shall be designated as confidential.

The CTRMMP shall include the following elements and measures.

- A proposed general research design that includes a discussion of cultural research questions and testable hypotheses specifically applicable to the project area, and a discussion of artifact collection, retention/disposal, and curation policies as related to the research questions formulated in the research design. The research design will specify that the preferred treatment strategy for any cultural or tribal cultural resource is avoidance. A specific mitigation plan shall be prepared for any unavoidable impacts to any historical resources, unique archaeological resources, or tribal cultural resources (as defined in the California Environmental Quality Act and determined by the CPM). A prescriptive treatment plan may be included in the CTRMMP for limited data types. Specification of the implementation sequence and the estimated time frames needed to accomplish all project-related tasks during the ground-disturbance and post-ground–disturbance analysis phases of the project.

- Identification of the person(s) expected to perform each of the tasks, their responsibilities, and the reporting relationships between project construction management and the mitigation and monitoring team.
- A description of how Native American Monitors or observers will be included, the procedures to be used to select them, and their role and responsibilities.
- A description of all impact-avoidance measures (such as flagging or fencing) to prohibit or otherwise restrict access to cultural or tribal cultural resources that are to be avoided during ground disturbance, construction, and/or operation, and identification of areas where these measures are to be implemented. The description shall address how these measures would be implemented prior to the start of ground disturbance and how long they would be needed to protect the resources from project-related effects. A statement that all encountered cultural and tribal cultural resources over 50 years old shall be recorded on Department of Parks and Recreation (DPR) 523 forms and mapped and photographed. In addition, all archaeological materials retained during archaeological investigations (survey, testing, data recovery) shall be curated in accordance with the California State Historical Resources Commission's (SHRC's) Guidelines for the Curation of Archaeological Collections (1993, or future updated guidelines from the SHRC), into a retrievable storage collection in a public repository or museum.
- A statement that the project owner will pay all curation fees for artifacts recovered and for related documentation produced during cultural and tribal cultural resource investigations conducted for the project. The project owner shall identify three possible curation facilities that could accept archaeological materials resulting from project activities.
- A statement demonstrating when and how the project owner will comply with Health and Human Safety Code, section 7050.5(b), and Public Resources Code, section 5097.98(b) and (e), including the statement that the project owner will notify the CPM and the NAHC of the discovery of human remains.
- A statement that the CRS has access to equipment and supplies necessary for site mapping, photography, and recovery of any archaeological materials that are encountered during ground disturbance and cannot be treated prescriptively.
- A description of the contents, format, and review and approval process of a final Cultural and Tribal Cultural Resources Report (CTRR), which shall be prepared according to Archaeological Resource Management Report (ARMR) guidelines.

MM CUL-3 Worker Environmental Awareness Program (WEAP) Prior to and for the duration of ground disturbance, the project owner shall provide WEAP training to all new workers within their first week of employment at the project site, along the linear facilities routes, and at laydown areas, roads, and other ancillary areas. The cultural and tribal cultural resources part of this training shall

be prepared by the CRS, may be conducted by any member of the cultural and tribal cultural resources team, and may be presented in the form of a video. The CRS shall collaborate with any consulting California Native American tribal members if requested by a tribe in preparing and presenting the training. The WEAP program can be the same as the program outlined in COC **CUL-3**. During the training and during construction, the CRS shall be available (by telephone or in person) to answer questions posed by employees. The training may be discontinued when ground disturbance is completed or suspended, but must be resumed when ground disturbance, such as landscaping, resumes. The training shall include:

- A discussion of applicable laws and penalties under law;
- Samples or visuals of artifacts that might be found in the project vicinity;
- A discussion of what such artifacts may look like when partially buried, or wholly buried and then freshly exposed;
- A discussion of what prehistoric and historical archaeological deposits look like at the surface and when exposed during construction, and the range of variation in the appearance of such deposits;
- Instruction that the CRS, Alternate CRS, and CRMs have the authority to halt ground disturbance around a discovery to an extent sufficient to ensure that the resource is protected from further impacts, as determined by the CRS;
- Instruction that employees, if the CRS, Alternate CRS, or CRMs are not present, are to halt work on their own in the vicinity of a potential cultural or tribal cultural resource discovery, and shall contact their supervisor and the CRS or CRM, and that redirection of work would be determined by the construction supervisor and the CRS;
- An informational brochure that identifies reporting procedures in the event of a discovery;
- An acknowledgement form signed by each worker indicating that they have received the training; and
- A sticker that shall be placed on hard hats indicating that environmental training has been completed.

No ground disturbance shall occur prior to implementation of the WEAP program.

MM CUL-4 Unanticipated Discovery of Cultural Resources In the event archaeological resources are unexpectedly encountered during ground-disturbing activities, work within 50 feet of the find shall halt and the CRS be contacted immediately to evaluate the resource. Procedures laid out in the CTCRMMP shall be followed. These may include testing, excavation, and monitoring of the rest of construction. If the resource is determined by the CRS to be precontact, then representatives from interested Native American tribes shall also be contacted to

participate in the evaluation of the resource. If the resource proves to be eligible for the CRHR and significant impacts to the resource cannot be avoided via Project redesign, the CRS shall prepare a data recovery plan tailored to the physical nature and characteristics of the resource, per the requirements of the California Code of Regulations, title 14, section 15126.4(b)(3)(C). The data recovery plan shall identify data recovery excavation methods, measurable objectives, and data thresholds to reduce any significant impacts to cultural resources related to the resource. Pursuant to the data recovery plan, the CRS and Native American representative, as appropriate, shall recover and document the scientifically consequential information that justifies the resource's significance. The lead agency shall review and approve the treatment plan and archaeological testing as appropriate, and the resulting documentation shall be submitted to the regional repository of the California Historical Resources Information System, per California Code of Regulations, title 14, section 15126.4(b)(3)(C).

MM CUL-5 Discovery of Human Remains In the event human remains are uncovered during ground-disturbing activities (including construction, operations and maintenance, and decommissioning), the applicant or its contractor shall immediately halt work within a 100-foot radius, contact the Solano County Coroner to evaluate the remains, and follow the procedures and protocols pursuant to the California Code of Regulations, title 14, section 15064.5(e)(1). The Health and Safety Code, section 7050.5, requires that no further disturbance shall occur until the County Coroner has made the necessary findings as to origin and disposition pursuant to the Public Resources Code, section 5097.98. If the remains are determined to be of Native American descent, the coroner has 24 hours to notify the NAHC. The NAHC will then identify the most likely descendant of the deceased Native American. The most likely descendant will make recommendations for means of treating, with appropriate dignity, the human remains and any associated grave goods as provided in Public Resources Code Section 5097.98.

5.4.7 References

ACHP 2005 – Advisory Council on Historic Preservation. "Exemption Regarding Historic Preservation Review Process for Effects to the Interstate Highway System," *Federal Register* vol. 7, no. 46. March 10.

Aspen 2025 DPR 523 – Update for the original ICF June 27, 2024, DPR 523 for 5310 Kilkenny Road. Prepared by Aspen Environmental Group December 20, 2025. Update on file at CEC Cultural Resources Unit.

Bailey 1966 – E. H. Bailey. "Geology of Northern California." California Division of Mines and Geology Bulletin 190.

Baker and Bakic 2003 – C. L. Baker and T. Bakic. National Register of Historic Places Evaluation, Vaca-Dixon Substation, Solano County, California. Prepared by PAR Environmental Services. Prepared for Pacific Gas and Electric Company.

City of Vacaville 2015 – City of Vacaville. "City of Vacaville General Plan." Available online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents

ICF 2025 – ICF (TN 263605). Cultural Resources Inventory Report for the Corby Battery Energy Storage System Project in Solano County, California – Part I of II – February 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Geller 2024a – Linda Geller (TN 260488). Linda Geller Comments – No on Corby Energy BESS. Docketed Date: 12/5/2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Geller 2024b – Michael Geller (TN 260489). Michael Geller Comments – Please Reject the Corby Application for BESS. Docketed Date: 12/5/2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Howe 2002 – J. Howe (editor). "The Houses We Live In." San Diego, CA: Thunder Bay Press, 2002.

Jacobs Engineering Group, Inc. 2023. Kola Interconnect Battery Energy Storage Project, Alameda County, California. Prepared for Jola Interconnect, LLC. July 2023. Sacramento, California.

McAlester 2015 – Virginia McAlester. "A Field Guide to American Houses." Alfred A. Knopf; 2015. New York.

Meyer and Rosenthal 2007 – Jack Meyer and Jeffrey Rosenthal. Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4. Submitted to Caltrans District 4, Oakland, CA.

Milliken 1995 – Randall Milliken. A Time of Little Choice. Menlo Park, CA: Ballena Press, 1995.

SCHS 2025 – Solano County Historical Society (TN 267061). Solano County Historical Society Comments – Opposition to Corby Battery Storage Project. Docketed November 7, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Solano County 2008 – *Solano County General Plan*. Approved November 4, 2008. Available online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part 1. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024l – Tetra Tech (TN 259891). Volume 2 App 4-7 Geology & Soils Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025c – Tetra Tech (TN 262632). Application Section 2 Project Description Redline. Docketed April 9, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026e – Tetra Tech (TN 268433). Volume 2 App 2 Project Description Appendices Part 2. Dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

USDA 2024 – U.S. Department of Agriculture. Web Soil Survey USDA Website. Available online at: https://websoilsurvey.nrcs.usda.gov/app/

Vacaville Reporter 1922 – Vacaville Reporter. “Kilkenny Estate,” Vacaville Reporter, Vacaville, California, August 18, 1922, page 4.

5.5 Efficiency and Energy Resources

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to efficiency and energy resources. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.5.1 Environmental Setting

Existing Conditions

The proposed Corby Battery Energy Storage System Project (project) would store and discharge electricity utilizing a battery energy storage system (BESS) to enhance grid reliability. The project would consist of a BESS with a total capacity of 300 megawatts (MW) for up to four hours (TT 2024a, Section 2.0). BESS stores electricity from the grid during periods of low demand and discharges power back to the grid during peak demand to enhance reliability and stability. The project would not include any permanent diesel, natural gas, or liquid petroleum-powered emergency generators to support critical loads during operations. Instead, power for critical loads would be provided through a separate auxiliary power connection to the local utility distribution system (TT 2024a, Section 2.3.2.3).

Regulatory

Federal

There are no applicable federal laws, ordinances, regulations, and standards (LORS) that govern the efficiency of the utilization of BESS.

State

California 2025 Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Standards Code, California Code of Regulations, Title 24. The California Green Building Standards Code (California Code of Regulations, Title 24, Part 11) applies to the planning, design, operation, construction, use, and occupancy of newly constructed power plants and their ancillary facilities and requires the installation of energy efficient indoor infrastructure.

Senate Bill 100—The 100 Percent Clean Energy Act of 2018. Senate Bill (SB) 100 (Chapter 312, Statutes of 2018) requires that retail sellers and local publicly owned electric utilities procure a minimum quantity of electricity products from eligible renewable energy resources so that the total kilowatt-hours of those products sold to their retail end-use customers achieve 44 percent of retail sales by December 31, 2024, 52 percent by December 31, 2027, and 60 percent by December 31, 2030. The bill also requires the Public Utilities Commission, California Energy Commission, and State Air Resources Board to utilize programs authorized under existing statutes to meet the

state policy goal of 100 percent of total retail sales of electricity in California provided by eligible renewable energy resources and zero-carbon resources by December 31, 2045.

Local

Solano County General Plan. The Resources Chapter, Energy Resources and Conservation section of the Solano County General Plan promotes energy conservation, energy efficiency, and utilization of renewable energy resources (Solano 2008).

Cumulative

Section 15130 of the CEQA Guidelines (Cal. Code Regs., tit. 14) requires a discussion of cumulative environmental impacts. Cumulative impacts are two or more individual impacts that, when considered together, are considerable or that compound or increase other environmental impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence but need not provide as much detail as the discussion of the impacts attributable to the project alone.

Pursuant to CEQA, a cumulative impacts analysis can be performed by either 1) summarizing growth projections in an adopted general plan or in a prior certified environmental document, or 2) compiling a list of past, present, and probable future projects producing related or cumulative impacts. The second method has been utilized for the purposes of this Staff Assessment.

5.5.2 Environmental Impacts

EFFICIENCY AND ENERGY RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?	☐	☐	☒	☐
b. Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, energy

5.5.2.1 Methodology and Thresholds of Significance

Methodology

The above environmental checklist constitutes the methodology for this analysis.

Thresholds of Significance

There are no quantitative thresholds of significance related to the use of energy resources for the construction of a BESS. Staff's threshold is qualitative based on the use of standard construction equipment and techniques deployed at similar types of industrial projects to avoid wasteful, inefficient, or unnecessary consumption of energy resources, during project construction. The use of standard construction methodologies and equipment with best management practices would be considered a less than significant impact on energy resources.

For operations of the BESS, primarily charging and discharging, there are no quantitative thresholds for energy efficiency of round trip cycling of the BESS. Staff uses a qualitative threshold that if the selected BESS technology contains the type of components and systems typical of a utility scale system at the time of project filing, impacts on energy resources are considered not to be wasteful and inefficient and less than significant.

5.5.2.2 Direct and Indirect Impacts

a. Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?

Construction

Less Than Significant Impact. Based on the analysis below, the construction of the project would have a less than significant impact on local and regional energy supplies and would not consume energy resources in a wasteful, inefficient, or unnecessary manner.

Jurisdictional and Non-Jurisdictional Project Components

Construction would take approximately 15 months (including groundwater well development or 14 months without) to complete (TT 2024a, Section 2.4.4). Construction activities would include site preparation, grading, BESS installation, substation installation, and linear facilities construction (TT 2024a, Section 2.4.3 and Section 2.4.4). Throughout these construction activities, various equipment, such as excavators, dozers, rollers, graders, and cranes, would consume nonrenewable energy resources, primarily fossil fuels such as gasoline and diesel (TT 2024c, Section 4.6.3.2). It is anticipated that fossil fuels used by this equipment during construction would be used efficiently and would not result in significant long-term depletion of these energy resources or permanently increase the project's reliance on them.

The project would implement best management practices to reduce waste production during construction. For example, the idling time of construction equipment during the construction phase would be minimized by either shutting off equipment when not in use or reducing the idling time to a maximum of five minutes (TT 2024c, Section

4.6.3.2). Nonhazardous Construction waste would be recycled or disposed at a permitted landfill (TT 2024c, Section 4.19.2.1).

Therefore, construction would have a less than significant impact on local and regional energy supplies and a less than significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources.

Operation

Less Than Significant Impact. Based on the analysis below, the project's use of fuel during operations would have a less than significant impact on energy supplies and resources. Furthermore, project operations would not consume energy in a wasteful, inefficient or unnecessary manner.

Jurisdictional and Non-Jurisdictional Project Components

The project would include a BESS to store electricity during periods of low demand and discharge it back to the grid during periods of high demand. This system would help balance energy supply, enhance grid reliability, and improve overall energy efficiency by shifting electricity usage to when it is most needed.

For energy storage systems, the round-trip efficiency is a useful measure of energy consumption from the grid. A higher round-trip efficiency indicates less energy is lost in the processes of storing and discharging electricity. The round-trip efficiency is calculated as the ratio of useful energy output divided by useful energy input. A BESS has a high round-trip efficiency of approximately 85 percent, meaning most of energy stored is returned for use (NREL 2024). Their inefficiency can be attributed to heat and electrical transmission losses.

The project is expected to use new LG batteries with other new components and current battery management systems to ensure energy efficiency is comparable to other recent BESS facilities.

Staff concludes that energy consumed during operations would not create significant adverse effects on energy supplies or resources, nor would it consume energy in a wasteful or inefficient manner.

b. Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency?

Construction

No Impact. Based on the analysis below, construction of the project would neither conflict with nor obstruct a state or local plan for renewable energy or energy efficiency, and therefore, would have no impact on those plans.

Jurisdictional and Non-Jurisdictional Project Components

The project is committed to energy-efficient construction and would implement measures to reduce energy consumption during construction. The project would recycle construction and demolition debris in compliance with Assembly Bill 341 (Chesbro, Chapter 476, Statutes of 2011) and Senate Bill 1018 (Chapter 39, Statutes of 2012). Moreover, the project would also comply with the California Green Building Code (TT 2024a, Section 2.4.6).

Operation

No Impact. Based on the analysis below, project operations would not impact a state or local plan for renewable energy or energy efficiency.

Jurisdictional and Non-Jurisdictional Project Components

During operation, the project would utilize grid electricity from Pacific Gas & Electric Company (PG&E) to charge the BESS, which would have a capacity of up to 300 MW and 1,200 megawatt-hours. The BESS would then discharge electricity back into the PG&E grid during peak demand periods to stabilize the system and enhance overall energy reliability (TT 2024a, Section 1.1 and Section 1.1.4).

PG&E has committed to meeting California's Renewable Portfolio Standard through its Integrated Resource Plan (PG&E 2022). PG&E's 2023 Power Content Label's Base Plan includes 32.8 percent Eligible Renewable, which includes 3.4 percent biomass and biowaste, 0.3 percent geothermal, 2.5 percent eligible hydroelectric, 20.2 percent solar, and 6.3 percent wind (PG&E 2023). The project would support California's renewable energy and storage goals by enabling the storage and discharge of renewable electricity to the PG&E grid. Furthermore, the project would be consistent with SB 100 (TT 2024a, Section 1.1.3).

The project would comply with the California Green Building Code through conformance with the California Building Standard Codes.

The project would not include permanent diesel, natural gas, or LPG emergency generators and, therefore, would consume minimal fossil fuels. Project energy consumption would be limited to minimal electricity for charging and maintenance.

Through energy-efficient design and increased renewable electricity storage, the project would neither conflict with nor obstruct state or local plans for renewable energy or energy efficiency and, therefore, would have no impact on those plans.

5.5.2.3 Cumulative Impacts

No Impact. As analyzed above, the project would not significantly consume diesel, natural gas, or liquid petroleum energy resources as part of construction or operation. In addition, a BESS stores electricity for later use rather than consuming energy as part

of long-term operations. Therefore, the project would have no adverse cumulative efficiency and energy resource impacts with past, present, or probable future projects.

5.5.3 Project Conformance with Applicable LORS

Table 5.5-1 below details staff's determination of conformance with applicable state LORS. As shown in this table, staff concludes that the proposed jurisdictional project components would conform with all applicable LORS.

TABLE 5.5-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
State	
Senate Bill (SB) 100—The 100 Percent Clean Energy Act of 2018.	**Yes.** The project would comply with SB100 through its energy-efficient design and increasing electricity storage.
California 2025 Energy Efficiency Standards for Residential and Nonresidential Buildings—Green Building Standards Code, California Code of Regulations, Title 24.	**Yes.** The project would comply with the California Green Building Code through conformance with the California Building Standard Codes.
Solano County General Plan.	**Yes.** The project would comply with the County's General Plan since the project would conserve and utilize energy resources efficiently.

5.5.4 Conclusions and Recommendations

As discussed above, the jurisdictional and non-jurisdictional project components would have a less than significant impact related to efficiency and energy resources and the jurisdictional project components would conform with applicable LORS.

5.5.5 Proposed Conditions of Certification

There are no proposed conditions of certification for the jurisdictional project components for efficiency and energy resources.

5.5.6 Recommended Mitigation Measures

There are no recommended mitigation measures for the non-jurisdictional project components for efficiency and energy resources.

5.5.7 References

NREL 2024 – National Renewable Energy Laboratory (NREL). Annual Technology Baseline. Utility-Scale Battery Storage. Accessed on: August 8, 2024. Accessed online at: https://atb.nrel.gov/electricity/2024/utility-scale_battery_storage

PG&E 2022 – Pacific Gas and Electric (PG&E). 2022 Integrated Resource Plan. Accessed on: January 3, 2024. Accessed online at: https://www.pge.com/en/about/doing-business-with-pge/integrated-resource-planning.html

PG&E 2023 – Pacific Gas and Electric (PG&E). 2023 Power Content. Accessed on: April 10, 2025. Accessed online at:

https://www.pge.com/assets/pge/docs/account/billing-and-assistance/bill-inserts/1224-power-content-label.pdf

Solano 2008 – Solano County General Plan Resources Chapter. Dated November 2008. Accessed on: October 29, 2025. Accessed online at: https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

5.6 Geology, Paleontology, and Minerals

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to geology, paleontology, and minerals. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.6.1 Environmental Setting

Existing Conditions

The proposed 300-megawatt Corby Battery Energy Storage System (BESS; project) is proposed on approximately 40.3 acres in eastern unincorporated Solano County, about 4.5 mi northeast of Vacaville, CA and five miles southwest of Dixon, CA. The project site is southwest and adjacent to the intersection of Kilkenny Road and Byrnes Road. Land uses near the project include single-family residences, rural roads, agricultural lands, Interstate-80 (I-80), and the existing Pacific Gas and Electric (PG&E) owned and operated Vaca-Dixon Substation. The project site is a privately owned parcel of agricultural land (TT 2024a).

The proposed project components include a 1,200-megawatt-hour BESS facility, a substation, two drainage ditches and stormwater retention ponds, a 1.1 mile-long 230-kilovolt overhead and underground intertie transmission (gen-tie) line, and interconnection facilities within the existing Vaca-Dixon Substation (TT 2024a, 2026a).

The gen-tie line would traverse northwest from the project substation, cross Interstate-80, and connect into the PG&E Vaca-Dixon Substation. The gen-tie line would be underground along Kilkenny Road and otherwise above-ground. The gen-tie line would include two structures at the project site, four structures between Kilkenny Road and I-80, and up to four structures north of I-80, near or on PG&E's Vaca-Dixon Substation property. The Point of Interconnection would be the gen-tie line pole adjacent to, and south of, I-80 (TT 2024a).

Geologic Hazards

Regional Geology

The project site is in eastern Solano County, where the northeastern San Francisco Bay Area Region transitions into the southwestern part of the Sacramento Valley. The San Francisco Bay Area Region is in the central part of the Coast Ranges geomorphic province, a northwest trending mountain range formed by the North American and Pacific transform tectonic plate boundary. The central Coast Ranges contain major subparallel northwest-striking dextral faults that travel through the province and create its topography. The Sacramento Valley is the northern part of the Great Valley

geomorphic province, a northwest-trending alluvial plain in central California (CDOC 2002).

Surface Quaternary[1] deposits in the region include sedimentary deposits, such as Holocene[2] and Pleistocene[3] alluvial fans and associated deposits. Bedrock in the region includes Pliocene[4] continental sedimentary rocks (CDOC 2009).

Local Geology and Stratigraphy

The project site is 0.5 mi south of Gibson-Sweany Creek and about one mile to 1.5 mi north of Ulatis Creek. The project site is relatively flat and currently developed for agriculture (TT 2024c). According to the California Department of Conservation (CDOC) California Geological Survey's (CGS) Preliminary Geologic Map of the Lodi 30' x 60' Quadrangle, the following geologic units are mapped at the surface within two miles of the project (CDOC 2009):

- Quaternary surficial deposits are mapped at the surface at the project site and within two miles of the project. These deposits are relatively recent in age, Holocene and Pleistocene, and unconformably overlie older rock formations (CDOC 2009; TT 2024c).
    - Latest Holocene (<~1000 years old) Alluvial Fan Levee Deposits (Qhly) are mapped at the surface within two miles of the project (TT 2024c). CDOC (2009) described the map unit as natural levee deposits of the latest Holocene alluvial fans.
    - Holocene Alluvial Fan Deposits (Qhf) are mapped at the surface about 0.25 miles south of, and one mile to two miles north of, the project (TT 2024c). CDOC (2009) described the map unit as alluvial fan sediment deposited by streams flowing from mountains as debris flows, hyper-concentrated mudflows, or braided streamflows. Alluvial fan deposits are comprised of sand, gravel, silt, and clay that is moderately to poorly sorted and moderately to poorly bedded (CDOC 2009).
    - Latest Pleistocene Alluvial Fan Deposits (Qpf) are mapped at the surface at the project site (TT 2024c). CDOC (2009) described the map unit as alluvial fan deposits that are similar in origin and composition to Holocene Alluvial Fan Deposits, but older and more dissected.
- Pleistocene Modesto Formation (Qm) is interpreted as potentially underlying Quaternary surficial deposits at the project site (TT 2024l). CDOC (2009) described the map unit as arkosic alluvium, sand with minor gravel and silt. The formation is mapped at the surface more than two miles east of the project, along the Cosumnes

1 The Quaternary period began 2.58 million years ago (Ma) and continues today (GSA 2022).
2 The Holocene epoch began 11.7 thousand years ago (ka) and continues today (GSA 2022).
3 The Pleistocene epoch began 2.58 Ma and ended 11.7 ka (GSA 2022).
4 The Pliocene epoch began 5.333 Ma and ended 2.58 Ma (GSA 2022).

and Mokelumne Rivers in the Sacramento Valley, where the formation forms low terraces, high floodplains, and alluvial fans (CDOC 2009).

- Pliocene Tehama Formation (Pth) occurs at the surface within two miles of the project's western boundary (TT 2024c). The Tehama Formation is interpreted as potentially underlying Quaternary surficial deposits and the Modesto Formation at the project site (TT 2024l). CDOC (2009) described the map unit as poorly consolidated, nonmarine, gray to maroon siltstone, quartz arenite sandstone, tuff, and pebble to cobble conglomerate.

In contrast with CDOC (2009) and the preliminary site-specific geotechnical investigation (TT 2024e), the site-specific paleontological investigation cited additional geologic mapping that indicated alluvial fan deposits at the project site may be relatively older than Holocene or Latest Pleistocene. The paleontological investigation hypothesized that, especially with increasing depth, alluvial fan deposits at the project may be older than Latest Pleistocene in age (TT 2024l).

Consistent with CDOC (2009), the paleontological investigation interpreted that the Pleistocene Modesto Formation and/or the Pliocene Tehama Formation likely underlie the Latest Pleistocene Alluvial Fan Deposits at the project site (TT 2024l).

Subsurface Soils

On behalf of the applicant, RRC Power & Energy, LLC (RRC) completed a preliminary site-specific geotechnical investigation for the project site. The purpose of the geotechnical investigation was to evaluate shallow soil and rock at the project site and make preliminary facility design recommendations to mitigate potential geologic hazards. The geotechnical investigation advanced, sampled, and tested ten borings, excavated two test pits, conducted field and laboratory tests on soil samples, and completed four electrical resistivity surveys (TT 2024e).

The geotechnical investigation summarized soil at the project site as follows: topsoil from 0 feet (ft) to 0.5 ft below ground surface (bgs), fat clay or clean clay from 0.5 ft to 3 ft bgs, lean clay from 3 ft to 9 ft bgs, poorly graded sand with clay from 9 ft to 13 ft bgs, and lean clay below 13 ft bgs. Subsurface exploration did not encounter bedrock. Groundwater levels were measured at 7.5 ft to 15 ft bgs. The field exploration observed alluvial fan sediments, predominantly clay, in the subsurface (TT 2024e).

Field exploration results are consistent with CDOC (2009) regional geologic mapping, which reported Latest Pleistocene Alluvial Fan Deposits at the surface at the project site (TT 2024e).

The geotechnical investigation neither sampled nor evaluated subsurface soils along the proposed gen-tie line route (TT 2024e).

Faulting and Seismicity

Northeastern Solano County is adjacent to a tectonic plate boundary that passes through the San Francisco Bay Region and contains many Holocene-active faults that produce high-magnitude earthquakes (USGS 2016). Potential seismic hazards include surface fault rupture, strong seismic ground shaking, seismically induced ground failure, such as liquefaction, and landslides (CBC 2025).

In accordance with the 1972 Alquist-Priolo Earthquake Fault Zone Act and the 1990 Seismic Hazards Mapping Act, the CGS delineates Zones of Required Investigation to reduce human and property losses from fault rupture, liquefaction, and earthquake-induced landslides (CDOC 2008, 2018a, 2024). To mitigate impacts from fault rupture, the CGS delineates Alquist-Priolo Earthquake Fault Zones (Earthquake Fault Zones) to prevent the construction of buildings for human occupancy on Holocene-active faults and fault zones. Earthquake Fault Zones are regulatory boundary zones surrounding well defined Holocene-active faults or fault zones. Holocene-active faults show evidence of rupture in the past 11,700 years (CDOC 2018a).

The CGS also delineates Pre-Holocene faults. Pre-Holocene faults show evidence of rupture in the past 1.6 million years, but do not show evidence of rupture in the past 11,700 years. Evidence that Pre-Holocene faults may rupture in the future should be considered (CDOC 2018a). For the evaluation in this section, Pre-Holocene faults showing evidence of rupture in the past 1.6 million years are termed “potentially active.”

According to the CGS Earthquake Zones of Required Investigation online mapping application, the CGS has not evaluated the Allendale 7.5’ topographic quadrangle, which contains the project site, for Earthquake Fault Zones. The CGS also has not evaluated the adjacent 7.5’ topographic quadrangles. The closest known and mapped Earthquake Fault Zone to the project is the Cordelia fault, which is 15 miles southwest of the project (CDOC 2024).

According to the United States Geological Survey (USGS) Quaternary Fault and Fold Database of the United States and the CGS Fault Activity Map of California, there are no Holocene-active nor potentially active faults intersecting the project site. **Table 5.6-1** lists known and mapped Holocene-active and potentially active faults that are within 25 miles of the project (CDOC 2022; USGS and CDOC 2026).

The closest Holocene-active or potentially active fault to the proposed project site is the Great Valley thrust fault zone, a potentially active fault that is five miles west of the project. Several significant Holocene-active faults are within 25 miles of the project. The closest Holocene-active faults to the project site are the Cordelia and Green Valley faults, which are 15 and 15.5 miles southwest of the project site, respectively (CDOC 2022; USGS and CDOC 2026).

TABLE 5.6-1 QUATERNARY FAULTS WITHIN 25 MILES TO THE PROJECT SITE

Fault	Status	Approximate Distance from the Project Site (miles)
Great Valley thrust fault zone	Potentially active	5
Midland fault zone	Potentially active	5
Rio Vista fault	Potentially active	6
Lagoon Valley fault	Potentially active	6.5
Kirby Hills fault	Potentially active	12
Cordelia fault	Holocene-active	15
Green Valley fault	Holocene-active	15.5
Soda Creek fault	Potentially active	20
West Napa fault	Holocene-active	23
Dunnigan Hills	Potentially active	23

Sources: CDOC 2022; USGS and CDOC 2026

Strong Ground Motion

The intensity of strong ground motion depends upon the magnitude of an earthquake, the distance from the epicenter, and the geology between the epicenter and the site, and geology at the site. Ground motion intensity in soft subsurface materials, such as soil or alluvium, is typically high. In soft subsurface materials, seismic waves typically slow down and increase amplitude. Ground motion intensity in hard subsurface materials, such as rock formations, is relatively low. In hard subsurface materials, seismic waves typically speed up and decrease in amplitude.

Holocene-active faults in Solano County and the San Francisco Bay Region have ruptured in the recent past and will produce significant earthquakes again (USGS 2015, 2016). Earthquake rupture modeling predicts high probabilities that one or more significant earthquakes will impact the San Francisco Bay Region, which includes Solano County, between 2014 and 2043. Modeling predicts probabilities of 98 percent for a M ≥ 6.0 earthquake, 72 percent for a M ≥ 6.7 earthquake, 51 percent for a M ≥ 7.0 earthquake, and 20 percent for a ≥ M 7.5 earthquake (USGS 2015).

CGS Map Sheet 48, Earthquake Shaking Potential for California, shows the level of shaking with a two percent probability of being exceeded in 50 years, which is equivalent to a 2,475-year average recurrence interval. CGS Map Sheet 48 predicts that violent shaking will impact the project site in northeastern Solano County. Violent shaking, defined as Modified Mercalli Intensity scale (MMI) 9, cracks, tilts, and shifts buildings off their foundations, cracks the ground, and breaks underground pipes (CDOC 2025b).

The Association of Bay Area Government's (ABAG) Hazard Viewer Map online mapping application classified the project site as susceptible to severe shaking (ABAG 2022a). Severe shaking, defined as MMI 8, causes slight damage to specifically designed

structures, considerable damage to ordinary buildings, and great damage to poorly built structures (CDOC 2025b).

The 2025 CBC requires that new structures be designed and constructed in accordance with an assigned Seismic Design Category to mitigate anticipated potential impacts from strong seismic ground shaking (CBC 2025). The preliminary site-specific geotechnical investigation calculated seismic design parameters, including a site modified peak ground acceleration (PGA) value of 0.547 units of gravity (g), for the project. The preliminary site-specific geotechnical investigation classified the project site as Seismic Design Category D (TT 2024e). The 2025 CBC requires structures in Seismic Design Category D to conduct a site-specific geotechnical and geohazard investigation to evaluate, and recommend mitigation, for strong seismic ground shaking and associated seismically induced geologic hazards.

Liquefaction and Lateral Spreading

Liquefaction is a geologic hazard that causes potentially damaging ground deformation. Liquefaction is a phenomenon in which dynamic forces, such as intense and prolonged ground shaking, cause saturated and cohesionless soils, such as sand, silt, and gravel, to temporarily lose their strength and act as a fluid. Liquefaction depends on the depth to water, grain size distribution, relative soil density, degree of saturation, and intensity and duration of the earthquake. Soils most susceptible to liquefaction are loose, uniformly graded, saturated, fine-grained sands that lie close to the ground surface (Youd et al. 2001; Towhata 2008).

The term liquefaction is typically used to describe materials that spread vertically. Lateral spreading is a type of liquefaction in which relatively flat-lying liquefied soil deposits spread horizontally toward a free face, such as an excavation, channel, or open body of water. Typically, lateral spreading is associated with the liquefaction of one or more subsurface layers near the bottom of an exposed slope. As failures tend to propagate as block failures, it is difficult to analyze and estimate where the first tension crack will form (Youd 2018).

The CGS has not evaluated the Allendale 7.5' topographic quadrangle nor adjacent quadrangles for Zones of Required Investigation for liquefaction zones (CDOC 2024). The ABAG's Hazard Viewer online mapping application classified the project site as very low to low susceptibility to liquefaction (ABAG 2022b).

The water content, or saturation, of subsurface materials influences liquefaction potential. In September 2023, the preliminary site-specific geotechnical investigation observed groundwater levels at 7.5 ft to 15 ft bgs (TT 2024e).

Landslides

Mass wasting, including landslides, is a mass of rock, soil, or debris that slides, flows, or falls downslope. Slope failure occurs when the shear strength of rock or soil in a slope

decreases below the threshold needed to withstand the force of gravity. Shear strength depends on soil and rock strength, the presence or absence of support, and ground saturation. Triggering events, such as seismic shaking or intense precipitation, may decrease slope stability and cause slope failure, because dynamic shaking and soil saturation can decrease the shear strength of soil and rock (Towhata 2008).

The CGS has not evaluated Allendale 7.5' topographic quadrangle nor adjacent quadrangles for Zones of Required Investigation for landslide zones (CDOC 2024).

According to the CGS Landslide Maps and Reports online mapping application, the CGS has completed comprehensive landslide mapping for the Allendale 7.5' topographic quadrangle (CDOC 2025a). In 1989, the CGS mapped landslide hazards in the area surrounding Vacaville. The site of the proposed project was not evaluated (CDOC 1989).

The CGS Map Sheet 58: Deep-Seated Landslide Susceptibility online mapping application classifies the landslide susceptibility of areas, from 0 to 10 for low to high. The landslide susceptibility ratings are based on rock strength and slope steepness. The project site is rated class 0 for landslide susceptibility (CDOC 2011). Regional geologic mapping did not observe landslide deposits within two miles of the project (CDOC 2009).

Saturation of subsurface materials also influences slope stability. The ABAG's Hazard Viewer online mapping application, which contains an evaluation on potential for rainfall induced landslides, classified the project site as flat land (ABAG 2020).

Soil Erosion

Grading natural and artificial slopes, and constructing and operating new structures, may alter existing natural flow pathways and increase the potential for water and wind to erode soils, alluvium, and rock. The impact of a project on erosion rates depends on the erodibility of subsurface materials, stormwater management methods during grading, construction, and operation, and schedule.

Stream channels do not intersect the project site. Precipitation at the project site travels as overland flow to Gibson-Sweany Creek, 0.5 mi north of the project, or Ulatis Creek, one mile to 1.5 mi south of the project. Precipitation at the project site also infiltrates into the subsurface (TT 2024c). The applicant performed water and wind erosion calculations to compare erosion rates under existing conditions versus with project construction and operation (TT 2024e).

See **Section 5.16, Water Resources**, for more information.

Subsidence

Subsidence is the gradual settling of the ground surface in response to the movement of material belowground. Heave is the gradual increase in ground surface elevation in response to the movement of material belowground.

Natural processes that may cause subsidence include soil compaction, sinkhole formation, earthquakes, and fault creep. During earthquakes, rapid vertical movement across a fault can cause essentially instant subsidence or heave. Slow movement across a fault, also known as fault creep, can cause gradual subsidence or heave if movement across a fault has a vertical component.

Artificial activities that may cause subsidence include removal or addition of material belowground, such as groundwater pumping, hydraulic fracturing, oil extraction, and mining. Natural or artificial groundwater recharge may cause heave as groundwater levels increase.

The project is in the northern part of the Solano subbasin (DWR Basin No. 5-021.16), a subbasin in the Sacramento Valley groundwater basin. Under the Sustainable Groundwater Management Act (SGMA), the California Department of Water Resources (DWR) designated the Solano Subbasin as a medium-priority basin (DWR 2020).

According to the USGS Areas of Land Subsidence in California online mapping application, the project site is not a location where artificial subsidence has occurred or is occurring (USGS 2018). The Solano Subbasin GSAs' 2025 Groundwater Sustainability Plan (GSP) Annual Report for Water Year 2024 reported subsidence data for the Solano subbasin. From 2012 to 2024, total vertical displacement measurements of -0.0710 ft and -0.1415 ft were observed at stations in Vacaville and Dixon, respectively (Solano Collaborative 2025).

See **Section 5.16, Water Resources**, for more information.

Geologic and Mineral Resources of Commercial, Recreational, and Scientific Value

In the context of the California Environmental Quality Act (CEQA), mineral resources are land areas or deposits deemed significant by the CDOC (CCR 2018b). A mineral resource is a concentration of natural inorganic materials or fossilized organic material occurring in such form, quantity, or quality that there are reasonable prospects for economic extraction. Inorganic mineral resources include non-fuel materials such as aggregate (sand and gravel), metals (gold, silver, and iron), and industrial minerals (clays, limestone, and gypsum). Petroleum resources are fossilized organic materials and include fuel materials, such as coal, crude oil, and natural gas.

Extraction of mineral resources significantly contributes to Solano County's economy. However, several issues influence mineral extraction, including the location of the

mineral resources, commercial values, potential impacts to the environment, and land use conflicts (Solano County 2008). Actively mined mineral resources in Solano County are sand and gravel, stone, and natural gas (CDOC 2016, 2026ab).

The CDOC State Mining and Geology Board (SMGB) administrates a mineral lands inventory and classification process. Areas are classified based on geologic factors without regard to existing land use and land ownership. Using SMGB guidelines, the CGS has mapped mineral resource zones (MRZ) throughout much of California (CDOC 2000). In 2018, the CGS updated MRZ mapping in Solano County. The project site is mapped in an MRZ-1 area, which is an area where geologic information indicates there is little likelihood for the presence of significant concrete aggregate resources (CDOC 2018b).

The CDOC Division of Mine Reclamation (DMR) list of mines, referred to as the AB 3098 List and regulated under the Surface Mining and Reclamation Act (SMARA), and Mines Online mapping application list eight active or potentially active mines in Solano County. These mines extract sand and gravel or stone. The closest active or potentially active mine to the project site is about 12 miles south, near Fairfield, CA (CDOC 2016, 2026b). According to the USGS Mineral Resources online mapping application, the closest inactive mines to the project are quarries and borrow pits in Vacaville that are about four miles southwest of the project site (USGS 2011).

According to the CDOC Geologic Energy Management Division (CalGEM) Well Finder online mapping application, there are no energy production related wells at the project site. The closest energy production wells to the project are two plugged and abandoned wells that are between two miles and three miles away. In southeastern Solano County, there are several active and idle natural gas wells that are at least ten miles from the project (CDOC 2026a).

At the project site, the known geologic units at the surface and shallow subsurface are Latest Pleistocene Alluvial Fan Deposits (CDOC 2009; TT 2024c). Excavation may encounter underlying older Quaternary sedimentary deposits and Pleistocene or Pliocene rock formations, such as the Pleistocene Modesto Formation (TT 2024l).

Paleontological Resources

Paleontological resources are fossils and fossiliferous deposits consisting of remains of vertebrates, invertebrates, and plants, the traces of these organisms, and other lifeforms. Paleontological resources are typically found in rock formations and Quaternary sedimentary deposits. With some observed exceptions, paleontological resources are usually older than recorded human history (SVP 2010).

Fossils are important scientific and educational resources because they are used to document the present and evolutionary history of extant and extinct organisms. Fossils help us understand geologic conditions and events that occurred in the past. For example, fossils provide information on the paleoenvironment that existed at the time

and location in which the organism lived. Fossils help determine the relative ages of the geologic formations in which they occur (SVP 2010).

Fossils are considered a nonrenewable scientific resource and are afforded protection under several federal, state, and local LORS because most of the organisms they represent are extinct (SVP 2010).

Paleontological Potential

The Society of Vertebrate Paleontology (SVP) published professional standards for assessing the paleontological potential of geologic units and mitigating potential impacts to paleontological resources during ground disturbing activities. Each geologic unit's paleontological potential determines the mitigation needed to reduce potential impacts to paleontological resources during ground disturbing activities (SVP 2010).

SVP paleontological potential considers the potential for a geologic unit to yield abundant or significant vertebrate fossils or to yield a few significant vertebrate, invertebrate, plant, or trace fossils. A geologic unit is assumed to contain fossils of similar quantity and quality to those previously recorded in the unit elsewhere in the region. Therefore, potential fossil yield is inferred from the quality and quantity of fossil specimens at recorded fossil sites in that geologic unit in the region and from recorded sites in similar geologic units in similar geological settings (SVP 2010).

Paleontological potential also considers the importance of recovered fossils for stratigraphic interpretations, age determinations of geologic units, paleoenvironmental and paleoclimatic reconstructions, or for understanding evolutionary histories. SVP standards classify the paleontological potential of geologic units as High, Low, Undetermined, and None (SVP 2010). These categories are described in **Table 5.6-2**.

TABLE 5.6-2 SOCIETY OF VERTEBRATE PALEONTOLOGY DEFINITIONS OF PALEONTOLOGICAL POTENTIAL

Rating	Definition
High	Geologic units from which vertebrate or significant invertebrate, plant, or trace fossils have been recovered are considered to have a high potential for containing additional scientifically important paleontological resources. Geologic units that contain potentially datable organic remains older than late Holocene, including deposits associated with animal nests or middens, and geologic units which may contain new vertebrate deposits, traces, or trackways, are also classified as having High Potential.
Low	Geologic units with low potential are known to produce significant fossils only on rare occasions, and only preserve fossils in rare circumstances such that the presence of fossils is the exception not the rule, for example, basalt flows or recent colluvium.
Undetermined	Geologic units for which little information is available concerning their geologic context (depositional environment, age) and potential to contain paleontological resources are considered to have undetermined potential. The paucity of data is usually from a lack of study in that unit or because of high variability in the unit's lithology. Typically, further study is necessary to determine whether these units

TABLE 5.6-2 SOCIETY OF VERTEBRATE PALEONTOLOGY DEFINITIONS OF PALEONTOLOGICAL POTENTIAL

Rating	Definition
	have high, low, or no potential to contain scientifically significant paleontological resources. In cases where no subsurface data are available, paleontological potential can sometimes be determined by strategically located excavations into subsurface stratigraphy.
None	Geologic units with no potential are those that formed at high temperatures and pressures, deep within the Earth, such as plutonic igneous rocks, and high-grade metamorphic rocks. Since the environment in which these rocks formed is not conducive to the preservation of biological remains, they do not contain fossils. Manmade fill also is considered to possess no paleontological potential.

Source: SVP 2010

Observed Paleontological Resources

On behalf of the applicant, ECORP Consulting, Inc. (ECORP) completed a site-specific paleontological investigation to analyze the paleontological potential of geologic formations at, and near, the project site. The paleontological investigation reviewed geologic mapping, the preliminary site-specific geotechnical investigation conducted for the applicant, scientific literature, and an online paleontological database. The investigation also completed a pedestrian survey of the project site (TT 2024l).

Fossil localities of extinct Late Pleistocene land mammals, such as bison, dire wolf, ground sloth, mammoth, and saber-toothed cat, are documented in Quaternary sedimentary deposits that are equivalent to the Holocene and Latest Pleistocene Alluvial Fan Deposits. Additional vertebrate fossil localities are documented in surficial deposits of these types and ages, including amphibians, birds, and reptiles (TT 2024l).

The University of California Museum of Paleontology (UCMP) online Locality Search Database lists many fossil localities in the Pleistocene Modesto Formation and Pliocene Tehama Formation. The Modesto Formation contains fossil localities for extinct Pleistocene land mammals, such as horses and mammoth. Fossilized invertebrates, including gastropods, and plants have also been found in the Modesto Formation. The Pliocene Tehama Formation contains fossil localities for Pliocene land animals, including camel, horses, mammoth, mastodon, tortoises, and turtles (UCMP 2026).

ECORP conducted a pedestrian survey of the project site to field-check geologic mapping and search for rock outcrops and paleontological resources. The survey did not observe paleontological resources at the surface at the project site (TT 2024l).

Regulatory

The project would be required to comply with all applicable federal, state, and local LORS and obtain building permits from the California Energy Commission (CEC). The issuance of the building permits and oversight provided by the CEC via the CEC's delegate chief building official (DCBO) would confirm that the project complies with the applicable regulatory framework.

Federal Geologic Hazards, and Geologic, Mineral, and Paleontological Resources

The following federal LORS related to geologic hazards and geologic, mineral, and paleontological resources apply, or may apply, to the proposed project.

Federal Clean Water Act and California's Porter-Cologne Water Quality Control Act. The State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCB) are responsible for the regulation and enforcement of the water quality protection requirements of the federal Clean Water Act (CWA) and the state's Porter-Cologne Water Quality Control Act (Porter-Cologne) (SWRCB 2025).

As required under Section 402 of the CWA and implemented in the Code of Federal Regulations (CFR), Title 40, Chapter I, Subchapter D, Part 127, the National Pollutant Discharge Elimination System (NPDES) is the permitting program that allows point source dischargers to comply with the CWA and Porter-Cologne laws. This regulatory framework protects the beneficial uses of the state's surface and groundwater resources for public benefit and environmental protection. Compliance with applicable NPDES permits from the SWRCB or local RWQCB ensures the proposed project protects water quality (CFR 2019; SWRCB 2025).

As required under Section 404(a) of the CWA and implemented in the CFR, Title 40, Chapter I, Subchapter D, Part 121, the U.S. Army Corp of Engineers is the authority to issue permits for the discharge of fill and dredging material into navigable waters, defined as waters of the United States (CWA Section 502). Under Section 401(a) of the CWA, any applicant of a permit under the CWA must provide a State certification to the Federal permitting agency. In California, the local RWQCB is the Section 401 certifying agency (CFR 2023, SWRCB 2025).

As required under Section 303(d) of the CWA and implemented in the CFR, Title 40, Chapter I, Subchapter D, Part 127, states are required to identify impaired surface water bodies and develop total maximum daily loads (TMDLs) for contaminants of concern. A TMDL is the quantity of pollutant that can be assimilated by a water body without violating water quality standards. Listing of a water body as impaired does not necessarily suggest that the water body cannot support the beneficial uses. The intent is to identify the water body as requiring future development of a TMDL to maintain water quality and reduce the potential for future water quality degradation (CFR 2017; SWRCB 2025).

See **Section 5.16, Water Resources**, for more information.

State Geologic Hazards

The following state LORS related to geologic hazards apply to the proposed project.

Alquist Priolo Earthquake Fault Zoning Act. The 1972 Alquist-Priolo Earthquake Fault Zone Act, found in California Public Resources Code (PRC), Division 2, Chapter 7.5, requires the CGS to delineate Earthquake Fault Zones to prevent the construction of buildings for human occupancy on Holocene-active faults. Earthquake Fault Zones are regulatory boundary zones surrounding well defined Holocene-active faults or fault segments (CDOC 2018a; PRC 2026a).

The Alquist-Priolo Earthquake Fault Zone Act recognizes three types of faults. Holocene-active faults are those that have ruptured in the past 11,700 years. Pre-Holocene faults show evidence of rupture in the past 1.6 million years, but do not show evidence of rupture in the past 11,700 years. Pre-Holocene faults are not regulated under the Alquist-Priolo Earthquake Fault Zone Act. Evidence that Pre-Holocene faults may rupture in the future should be considered. Age-undetermined faults are those in which the most recent rupture is unknown. The Alquist-Priolo Earthquake Fault Zone Act considers age-undetermined faults as Holocene-active faults, until proven otherwise (CDOC 2018a; PRC 2026a).

California Building Code. The 2025 California Building Code (CBC), found in the California Code of Regulations (CCR), Title 24, Part 2, prescribes standards for constructing safer buildings and contains provisions for earthquake safety based on factors including occupancy type, soil and rock profile, ground strength, and distance to seismic sources. The CBC is updated every three years, with the 2025 CBC, including January 2026 errata, effective on January 1, 2026 (CBC 2025).

The CBC, Section 1613 requires that the structures be designed and constructed in accordance with a Seismic Design Category that is assigned based on the structure risk category and American Society of Civil Engineers publication 7-22 (ASCE 2022; CBC 2025). Section 1613 also allows for a permitting agency or geotechnical data on soil characteristics to determine a site's Seismic Design Category (CBC 2025).

The CBC, Section 1803, requires that geotechnical and geohazard investigations be conducted for most development projects to evaluate potential impacts related to geologic and seismic hazards. The CBC requires the project owner prepare a final geotechnical and geohazard report that recommends final design, grading, and construction criteria to mitigate potential impacts related to geologic hazards. California licensed and appropriately qualified design professionals must perform geotechnical and geohazard investigations and reporting (CBC 2025).

Section 1803 requires that appropriate geotechnical investigations be conducted when applicable investigative conditions may be present. Potential applicable investigations may include, but are not limited to questionable soils, expansive soils, and shallow groundwater (CBC 2025).

For sites assigned Seismic Design Categories C through F, Section 1803 requires geotechnical investigations to be conducted to evaluate slope instability, liquefaction,

total and differential settlement, and surface displacement due to faulting or seismically induced lateral spreading or lateral flow. For sites assigned Seismic Design Categories D through F, Section 1803 requires additional geotechnical investigations to evaluate additional potential hazards related to strong ground motion (CBC 2025).

Section 1803 requires geohazard investigations to be conducted to evaluate site geology, local and regional faults that are Holocene-active or potentially active, and anticipated ground-motion parameters that may require mitigation (CBC 2025).

Seismic Hazards Mapping Act. The 1990 Seismic Hazards Mapping Act, found in the PRC, Division 2, Chapter 7.8, requires the CGS to publish maps identifying Zones of Required Investigation that are subject to hazards associated with strong ground shaking, such as landslides, liquefaction, seiches, and tsunamis. The Seismic Hazards Mapping Act requires a geotechnical report to be prepared that defines and delineates any seismic hazard prior to approval of a project in a seismic hazard zone (CDOC 2008; PRC 2017b).

State Geologic, Mineral, and Paleontological Resources

The following state LORS related to geologic, mineral, and paleontological resources of commercial, recreational, and scientific value apply, or may apply, to the proposed project.

Paleontological Resources. The PRC, Division 5, Chapter 1.7, Section 5097.5 prohibits the unpermitted removal or damage to any paleontological site or feature from land that is under the jurisdiction of the state, or any city, county, district, authority, or public corporation, or any agency thereof. The CEQA lead agency having jurisdiction over a project is responsible for ensuring that paleontological resources are protected in compliance with CEQA and other applicable statutes. The CEC is the lead agency with the responsibility to ensure that fossils are protected during project construction and operation (PRC 2025).

The PRC, Division 13, Chapter 2.6, Section 21081.6 requires that the CEQA lead agency demonstrate project compliance with mitigation measures developed during the environmental impact review process (PRC 1994).

Surface Mining and Reclamation Act. The 1975 Surface Mining and Reclamation Act (SMARA), found in the PRC, Division 2, Chapter 9, provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to ensure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition. SMARA also encourages the production, conservation, and protection of the state's mineral resources. County governments enact ordinances to implement SMARA at the local level and hold reclamation financial assurances (PRC 2026c).

The PRC, Division 2, Chapter 9, Article 4, Section 2761 requires that the State Geologist classify land into areas if statewide or regional significance (PRC 2026c). To implement Article 4, the State Geologist classifies mineral lands into MRZs, which are defined as follows (CDOC 2000).

- MRZ-1: Areas where adequate geologic information indicates that no significant mineral deposits are present, or where it is judged that little likelihood for their presence exists (CDOC 2000).
- MRZ-2a: Areas underlain by mineral deposits where geologic data show that significant measured or indicated resources are present. Areas classified as MRZ-2a contain discovered mineral deposits that are either measured or indicated reserves as determined by such evidence as drilling records, sample analysis, surface exposure, and mine information. Lands included in the MRZ-2a category are of prime importance because they contain known economic mineral deposits (CDOC 2000).
- MRZ-2b: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present. Areas classified as MRZ-2b contain discovered deposits that are either inferred reserves or deposits that are presently sub-economic as determined by limited sample analysis, exposure, and past mining history. Further exploration work and/or changes in technology or economics could result in upgrading areas classified as MRZ-2b to MRZ-2a (CDOC 2000).
- MRZ-3a: Areas containing known mineral deposits that may qualify as mineral resources. Further exploration work within these areas could result in the reclassification of specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3a areas are considered to have moderate potential for the discovery of economic mineral deposits (CDOC 2000).
- MRZ-3b: Areas containing inferred mineral deposits that may qualify as mineral resources. MRZ-3b represents areas in geologic settings which appear to be favorable environments for the occurrence of specific mineral deposits. Further exploration work could result in the reclassification of all or part of these areas into the MRZ-3a category or specific localities into the MRZ-2a or MRZ-2b categories. MRZ-3b is applied to lands where geologic evidence leads to the conclusion that it is plausible that economic mineral deposits are present (CDOC 2000).
- MRZ-4: Areas where geologic information does not rule out either the presence or absence of mineral resources. The distinction between the MRZ-1 and MRZ-4 categories is important for land-use considerations. It must be emphasized that MRZ-4 classification does not imply that there is little likelihood for the presence of mineral resources, but rather there is a lack of knowledge regarding mineral occurrence. Further exploration work could well result in the reclassification of land in MRZ-4 areas to MRZ-3 or MRZ-2 categories (CDOC 2000).

Local Geologic Hazards

The following local LORS related to geologic hazards apply, or may apply, to the proposed project.

Solano County General Plan. Numerous Holocene-active and potentially active faults in, and near, Solano County can produce high-magnitude earthquakes and moderate-to-severe ground shaking throughout the county. Geologic hazards associated with seismicity include surface rupture, ground shaking, ground failure, slope instability, subsidence, and liquefaction (Solano County 2008).

The Solano County General Plan is a long-range policy framework for both land development and conservation in the unincorporated portions of the county to fulfill the community's vision for Solano County through 2030. Solano County's primary statements on goals, policies, and implementation programs regarding geologic hazards are in the following three chapters of the Solano County General Plan (Solano County 2008):

- Chapter Four, Resources:
  - Goal 10: Foster sound management of the land and water resources in Solano County's watersheds to minimize erosion and protect water quality using best management practices and protect downstream waterways and wetlands.
- Chapter Five, Public Health and Safety:
  - Goal 1: Minimize risk to property and protect lives from flood hazards.
  - Goal 2: Avoid the loss of life and injury and minimize property damage from seismic and geologic hazards.
- Chapter Eight, Public Facilities:
  - Goal 1: Provide adequate public services and facilities to accommodate the level of development planned by the County (Solano County 2008).

Solano County Code. The Solano County Code, Chapter 6.3, largely adopts the 2022 California Building Code, with modifications and amendments. The Solano County Code establishes ordinances for new construction to mitigate impacts related to geologic hazards (Solano County 2025).

Chapter 6.4 establishes ordinances for sewage systems for new construction, including on-site sewage disposal. Chapter 25 establishes ordinances for chemical toilets, sewage pumping trucks, domestic septage land application, and biosolids land application. These ordinances prevent environmental degradation and protect public health, safety, and welfare (Solano County 2025).

Chapter 31, the Grading, Drainage, Land Leveling, and Erosion Control Ordinance, adopts the Uniform Building Code, and establishes procedures, design principles and

standards, and implementation and enforcement methods for grading, erosion, and sediment control (Solano County 2025).

Vacaville General Plan. The Vacaville General Plan is a long-range policy framework for both land development and conservation within Vacaville's urban growth boundary and greater sphere of influence to fulfill the city's vision through 2035. The City of Vacaville's primary statements on goals, policies, and actions related to geologic hazards are in the following five chapters of the Vacaville General Plan (Vacaville 2015):

- Chapter Two, Land Use Element:
  - Goal LU-1: Preserve, promote, and protect the existing character and quality of life within Vacaville.
- Chapter Four, Conservation and Open Space Element:
  - Goal COS-2: Preserve and restore Vacaville's creeks.
  - Goal COS-13: Promote water conservation as an important part of a long-term and sustainable water supply.
  - Goal COS-14: Protect the quality and supply of surface water and groundwater resources.
- Chapter Six, Public Facilities and Service Element:
  - Goal PUB-13: Collect, transmit, treat, and dispose of wastewater in ways that are safe, sanitary, and environmentally acceptable.
  - Goal PUB-14: Coordinate wastewater conveyance, treatment, and disposal with land use planning.
  - Goal PUB-15: Pursue innovative solutions for wastewater treatment and disposal or reuse that are compatible with the environment.
- Chapter Seven, Safety Element:
  - Goal SAF-1: Minimize exposure to geologic hazards, including slope instability, subsidence, and expansive soils, and to seismic hazards, including ground shaking, fault rupture, liquefaction, and landslides.
  - Goal SAF-2: Collect, convey, store, and dispose of stormwater in ways that provide an appropriate level of protection against flooding, account for existing and future development, and address applicable environmental concerns.
  - Goal SAF-3: Provide effective storm drainage facilities for development projects.
  - Goal SAF-7: Reduce risk to life and property associated with emergencies and natural and human-made disasters.
  - Goal SAF-8: Improve Vacaville's ability to adapt and respond to the impacts of climate change (Vacaville 2015).

Vacaville Municipal Code. The Vacaville Municipal Code, Chapter 13.08 establishes ordinances for sewage systems for new construction, including on-site sewage disposal (Vacaville 2025).

Chapter 14.19, the Grading, Erosion, and Sediment Control Ordinance adopts the Uniform Building Code and establishes procedures, design standards, and implementation and enforcement methods for grading, sediment and erosion control, and stormwater management to comply with applicable federal and state LORS. Chapter 14.26, the Urban Storm Water Quality, Management and Discharge Control Ordinance establishes procedures for stormwater quality management to comply with applicable federal and state LORS (Vacaville 2025).

Chapter 15.20.252 largely adopts the 2022 California Building Code, with amendments, and establishes ordinances for new construction to mitigate impacts related to geologic hazards (Vacaville 2025).

Local Geologic, Mineral, and Paleontological Resources

The following local LORS related to geologic, mineral, and paleontological resources of commercial, recreational, or scientific value apply, or may apply, to the proposed project.

Solano County General Plan. Solano County's primary fuel and nonfuel mineral resources are natural gas, sand and gravel, clay, stone, calcium, and sulfur. Mineral resource extraction is significant for Solano County's economy (Solano County 2008).

Solano County's primary statements on goals, policies, and implementation programs regarding geologic and mineral resources are in Chapter Four, Resources (Solano County 2008):

- Chapter Four, Resources:
  - Goal 1: Manage and preserve the diverse land, water, and air resources of the county for the use and enrichment of the lives of present and future generations.
  - Goal 2: Ensure continued presence and viability of the county's various natural resources.
  - Goal 4: Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety (Solano County 2008).

CEC staff did not identify any statements in the Solano County General Plan related to paleontological resources (Solano County 2008).

Solano County Code. The Solano County Code, Chapter 29 implements the SMARA's regulations for surface mine operation, reclamation, and enforcement, with additional restrictions. Chapter 29 also includes ordinances for protection of state or locally-

mapped mineral resource zones (Solano County 2025). CEC staff did not identify any ordinances related to paleontological resources in the Solano County Code (Solano County 2025).

Vacaville General Plan. The City of Vacaville's primary statements on goals, policies, and actions related to geologic resources of commercial, recreational, and scientific value, mineral resources, and paleontological resources are in Chapter Four, Conservation and Open Space Element (Vacaville 2015):

- Chapter Four, Conservation and Open Space Element:
  - Goal COS-6: Protect and enhance cultural resources for their aesthetic, scientific, educational, and cultural values.
  - Goal COS-16: Consider the location of mineral resources in the development review process (Vacaville 2015).

Vacaville Municipal Code. The Vacaville Municipal Code, Title 14, the Land Use and Development Code, establishes ordinances for the protection of geologic, mineral, and paleontological resources for projects in which the City of Vacaville is acting as the lead agency (Vacaville 2025).

Professional Standards

The following professional standards apply to this project.

Paleontological Resources

Society of Vertebrate Paleontology (SVP), an international organization of professional paleontologists, has established guidelines and standard procedures that outline acceptable professional practices in the conduct of paleontological resource assessments and surveys, monitoring and mitigation, data and fossil recovery, sampling procedures, and specimen preparation, identification, analysis, and curation (SVP 2010).

Cumulative

Cumulative projects are identified as past, current, or reasonably foreseeable future projects that, when viewed in connection with the proposed project, have the potential to cause its effect(s) on geology, paleontology, and minerals to be potentially significant. A master list of cumulative projects located within Solano County is provided in **Appendix A, Table A-1**.

The cumulative project setting for geology, paleontology, and minerals includes all projects which may expose people or property to geologic hazards or destroy geologic, mineral, and paleontological resources of commercial, recreational, or scientific value. A project may have these potential impacts if it includes construction, excavation of native materials, groundwater pumping, or fossil fuel production.

5.6.2 Environmental Impacts and Mitigation

CEQA Guidelines Section 15126.2, found in the California Code of Regulations (CCR), Title 14, Division 6, Chapter 4, Article 9, requires an agency's environmental analysis to identify and focus on the significant effects of the proposed project on the environment. An agency is not required to analyze the impact of existing environmental conditions on a project or its future users unless a proposed project might cause or risk exacerbating environmental hazards or conditions that already exist[5] (CCR 2018a).

Consistent with CEQA Guidelines Section 15126.2, CEC staff first identified existing geologic hazards and then assessed whether the project would cause a significant environmental impact by causing a new geological hazard or exacerbating an existing geological hazard (CCR 2018a). Even though the project would not exacerbate existing geologic hazards, and thus there is no significant impact under CEQA, CEC staff recommends COCs to ensure the project's design, grading, construction, and operation are conform with applicable LORS to protect human life, property, and grid reliability.

The following CEQA Guidelines Environmental Checklist for Geology, Paleontology, and Minerals are found in the CCR, Title 14, Division 6, Chapter 3, Appendix G, VII. Geology and Soils and XII. Mineral Resources (CCR 2018b).

GEOLOGY, PALEONTOLOGY, AND MINERALS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☒	☐	☐
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☐	☒
ii. Strong seismic ground shaking?	☐	☒	☐	☐
iii. Seismic-related ground failure, including liquefaction?	☐	☒	☐	☐
iv. Landslides?	☐	☒	☐	☐
b. Result in substantial soil erosion or the loss of topsoil?	☐	☒	☐	☐

5 *California Bldg. Indus. Assn. v. Bay Area Air Quality Mgmt. Dist*. (2015) 62 Cal.4th 369.

GEOLOGY, PALEONTOLOGY, AND MINERALS Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
c. Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, liquefaction and lateral, subsidence, or collapse?	☐	☒	☐	☐
d. Be on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2025), creating substantial direct or indirect risks to life or property?*	☐	☒	☐	☐
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☒	☐
f. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☒	☐	☐
g. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?	☐	☐	☐	☒
h. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	☐	☐	☐	☒

*****Geology and Soils question (d) reflects the current 2025 California Building Code (CBC 2025), effective January 1, 2026, which is based on the 2024 International Building Code (IBC 2024).

5.6.2.1 Methodology and Thresholds of Significance

Geologic Hazards

The 2025 CBC provides geotechnical and geological investigation and design guidelines that engineers are required to follow for new construction projects. The guidelines require a project to evaluate potential geologic hazards that may impact a project. The guidelines also require a project to evaluate if it may cause or exacerbate existing geologic hazards. Geologic hazards include faulting and seismicity, liquefaction, static and dynamic soil settlement, subsidence, expansive soils, landslides, tsunamis, seiches, and others (CBC 2025).

CEC staff reviewed regional geologic mapping and evaluations of geologic hazards, including hazard mapping, performed by the Association of Bay Area Governments (ABAG), CGS, and USGS. CEC staff reviewed Application Section 4.7 Geology, Soils, and

Paleontological Resources and Section 4.10 Hydrology/Water Quality for geologic hazard information and assessments (TT 2024c). CEC staff reviewed the preliminary site-specific geotechnical investigation (TT 2024e) and water and wind erosion calculations (TT 2024l) that were conducted for the applicant.

On behalf of the applicant, RRC completed a preliminary site-specific geotechnical investigation in September 2024. RRC conducted field exploration and testing in September 2023 and October 2023. RRC advanced, logged, sampled, and tested ten borings using truck-mounted drill rigs with continuous flight hollow stem augurs. At the site for the BESS and stormwater retention ponds, the investigation advanced and logged nine borings (boring IDs B-1 through B-9) to depths of 20.5 ft to 40.5 ft bgs. At the substation site, RRC advanced and logged one boring (boring B-10) to a depth of 40 ft bgs (TT 2024e, 2026a).

RRC used a backhoe to excavate one test pit at the southwestern part of the BESS site (TP-1) and one test pit at the substation site (TP-SUB). The test pits were excavated to 10 ft bgs or refusal depth. Bulk samples were collected from the test pits at depths from 1 ft to 4 ft bgs. RRC sampled soils using Standard Penetration Test, Shelby, and Modified California split-spoon samplers (TT 2024e, 2026a).

RRC conducted pile load testing at the sites for the BESS and stormwater retention ponds (borings B-3, B-5, and B-8) and at the substation site (boring B-10). California Bearing Ratio (CBR) testing was conducted at the southwestern project site (boring B-2).

RRC collected and evaluated groundwater data. Data on groundwater levels and infiltration rates was collected at the site for the BESS and stormwater retention ponds (borings B-1, B-2, B-5, and B-9) and the substation site (boring B-10). Infiltration, also known as percolation, testing was conducted using temporary standpipe piezometers at 3 ft to 5 ft bgs. RRC left one piezometer installed in the northeastern project site, where one of two stormwater retention ponds is proposed (boring B-9) (TT 2024e, 2026a).

RRC collected, but did not evaluate, geophysical data, specifically soil Electrical Resistivity (ER) and Thermal Resistivity (TR) testing. Soil ER tests were conducted in the eastern part of the BESS site and at the substation site, specifically in borings B-3, B-5, B-10 and test pit TP-SUB. Bulk apparent electrical resistivity data provides information on subsurface soil and rock, including the potential presence and extent of groundwater and clay, sand, and gravel deposits. RRC completed soil TR testing to evaluate subsurface soil and rock at the western BESS site and at substation sites, specifically in borings B-2, B-4, B-6, and B-10 (TT 2024e, 2026a).

RRC conducted field and laboratory tests on samples to evaluate the project site's soils for engineering purposes related to geologic hazards. Soil samples were classified based on particle-sizes, liquid limits, and plasticity index. In the laboratory, samples were evaluated for water content, liquid limit, plastic limit, and plasticity index. Samples were

evaluated for the amount of soils finer than a No. 200 (75 micrometer) sieve, particle-size distribution, and soil compaction. Samples were evaluated for unconfined compressive strength of cohesive soils, one dimension swell or collapse of soils, and CBR. Soil samples were evaluated for resistivity, corrosion, sulfate and chlorides content, and thermal conductivity (TT 2024e).

The preliminary site-specific geotechnical investigation did not explore the proposed gen-tie line route (TT 2024e, 2026a).

To evaluate potential subsidence hazards, CEC staff evaluated regional subsidence mapping (USGS 2018) and the Solano Subbasin GSAs' 2025 Groundwater Sustainability Plan (GSP) Annual Report for Water Year 2024 (Solano Collaborative 2025). CEC staff evaluated the project's proposed water supply and demand in Application Section 4.10 Hydrology/Water Quality (TT 2024c).

Geologic and Mineral Resources of Recreational, Commercial, and Scientific Value

CEC staff reviewed regional geologic and mineral resource mapping performed by the CalGEM, CGS, DMR, and USGS to assess the project's potential impacts on geologic and mineral resources of recreational, commercial, and scientific value.

Paleontological Resources

CE staff reviewed regional geologic mapping, paleontological databases, Application Section 4.7 Geology, Soils, and Paleontological Resources (TT 2024c), and the site-specific paleontological investigation that was conducted for the applicant (TT 2024l).

On behalf of the applicant, ECORP completed a site-specific paleontological investigation of the proposed project site in October 2024. The paleontological investigation developed a baseline paleontological resources inventory of the project area. The paleontological investigation reviewed geologic mapping, literature, and the preliminary site-specific geotechnical investigation that RRC conducted for the applicant. The paleontological investigation checked the UCMP online paleontological database for fossil localities near the project (TT 2024l).

CEC staff also searched the UCMP's online paleontological database for fossil localities in rock formations that may underly the project site (UCMP 2026).

In May 2024, ECORP completed a pedestrian survey of the project site to field-check geologic mapping and search for rock outcrops and paleontological resources. The paleontological investigation used the Bureau of Land Management's (BLM) Potential Fossil Yield Classification (PFYC) system to assign a paleontological potential the geologic unit that is mapped at the surface at, or near, the project site (TT 2024l).

The project site is on privately owned land. Therefore, CEC staff used SVP (2010) guidelines to independently evaluate the paleontological potential of geologic

formations that occur at the surface within two miles of the proposed project site or may be encountered in the subsurface at the project site. Ratings consider how project construction and operation may impact potential nonrenewable paleontological resources. Construction-related impacts that could affect paleontological resources are ground disturbing activities, such as mass excavation operations, drilling and borehole excavations, trenching, tunneling, and grading.

5.6.2.2 Direct and Indirect Impacts

a. Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:

i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to California Geological Survey Special Publication 42.

Construction and Operation

No Impact. When a fault ruptures and produces an earthquake, the ground surface may rupture. Solano County is in the northeastern San Francisco Bay Region and southwestern Sacramento Valley. The San Francisco Bay Region contains numerous Holocene-active and potentially active faults. The Sacramento Valley also contains some Holocene-active and potentially active faults (CDOC 2022; USGS and CDOC 2026).

The CGS has not evaluated the Allendale 7.5' topographic quadrangle, which contains the project, for Earthquake Fault Zones. The closest known and mapped Earthquake Fault Zone to the project is the Cordelia fault, which is 15 miles away (CDOC 2024).

Regional geologic mapping does not show evidence of any known or mapped faults intersecting the project site (CDOC 2009). There are at least ten known and mapped active and potentially active faults within 25 miles of the project. The closest Holocene-active fault, the Cordelia fault, is 15 miles from the project. The closest potentially active faults, the Great Valley thrust fault zone and Midland fault zone, are five miles from the project (CDOC 2024; USGS and CDOC 2026).

The preliminary site-specific geotechnical investigation classified the project site as Seismic Design Category D (TT 2024e). The 2025 CBC, Section 1803, requires the project to conduct a site-specific geotechnical and geohazard investigation to evaluate, and recommend mitigation, for surface fault rupture (CBC 2025).

Due to the distance to known and mapped Holocene-active and potentially active faults, the preliminary site-specific geotechnical investigation did not recommend mitigation related to surface fault rupture, beyond compliance with the CBC, Solano County Code, and Vacaville Municipal Code (TT 2024c). CEC staff agrees the potential for rupture of a

known and mapped surface fault to impact the project site is less than significant and that mitigation for surface fault rupture would not be needed.

During construction and operation jurisdictional and non-jurisdictional project components, surface fault rupture would have no impacts on human life, property, and grid reliability.

ii. Strong seismic ground shaking?

Construction and Operation

Less Than Significant Impact with Mitigation Incorporated. During an earthquake, the severity of strong seismic ground shaking at a site depends on the distance from the fault that ruptured, earthquake magnitude, and the velocity, amplitude, and frequency of seismic waves, which local geologic and topographic conditions influence. Strong seismic ground shaking can cause structural damage and trigger other geologic hazards, such as liquefaction and landslides.

Holocene-active and potentially active faults within 25 miles of the project, and more distal faults, such as those in the San Francisco Bay Region, have ruptured in the past and will produce high magnitude earthquakes again. Between 2014 and 2043, the probabilities of an earthquake of M ≥ 6.7 on the Rodgers Creek-Hayward, Hunting Creek-Green Valley-Concord-Greenville, and Calaveras fault zones are 33 percent, 16 percent, and seven percent, respectively (USGS 2016).

A high magnitude earthquake on a nearby fault may cause strong seismic ground shaking at the project site. The project site may experience severe (MMI 8) or violent (MMI 9) ground shaking (ABAG 2022a; CDOC 2025b). The preliminary site-specific geotechnical investigation calculated seismic design criteria for the project site, including a site modified PGA of 0.547 g, and classified the project site as Seismic Design Category D (TT 2024e).

The 2025 CBC, Section 1803, requires the project to conduct a site-specific geotechnical and geohazard investigation to evaluate, and recommend mitigation, for strong seismic ground shaking (CBC 2025). Consistent with the CBC and local LORS, the applicant proposed to grade and construct the project following the recommendations in a final site-specific geotechnical and geohazard report. The applicant stated that potential impacts to human life would be lessened because personnel would only be onsite during construction, periodic maintenance, and decommissioning. The proposed project would be operated remotely and thus it would not include an onsite operations and maintenance building (TT 2024c).

To inform the final design, grading, and construction of jurisdictional project components, COC **GEO-1** requires the project owner to complete and submit a final geotechnical and geohazard report to the CEC for review and approval. The CBC requires that the final geotechnical and geohazard report include final grading and

facility design refinements to mitigate hazards from strong seismic ground shaking to less than significant. COC **GEO-1** requires the project owner to incorporate the final geotechnical and geohazard report recommended refinements.

Compliance with COC **GEO-1**, Facility Design COCs **CIVIL-1, GEN-1**, and **STRUC-1** (see **Section 4.1, Facility Design**), the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS would ensure the final design, grading, and construction of jurisdictional project components would mitigate potential impacts from strong seismic ground shaking on human life, property, and grid reliability to less than significant.

To inform the final design, grading, and construction of non-jurisdictional project components, CEC staff recommends compliance with **MM GEO-1**. **MM GEO-1** requires PG&E to complete a final geotechnical and geohazard report. The CBC requires that the final geotechnical and geohazard report include final grading and facility design refinements to mitigate hazards from strong seismic ground shaking to less than significant. **MM GEO-1** requires PG&E to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with **MM GEO-1**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable LORS would ensure the final design, grading, and construction of non-jurisdictional project components would mitigate potential impacts from strong seismic ground shaking on human life, property, and grid reliability to less than significant.

Based on the evaluation above, implementation of COCs and MMs would ensure that potential impacts from strong seismic ground shaking during project operation, including on human life, property, and grid reliability, would be less than significant.

iii. Seismic-related ground failure, including liquefaction?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Seismic-related ground failure, including liquefaction and lateral spreading, is a geologic hazard that can occur when saturated sediments experience seismic shaking. The CGS has not evaluated the Allendale 7.5' topographic quadrangle, which contains the project, for liquefaction zones (CDOC 2024). The ABAG classified the Latest Pleistocene Alluvial Fan Deposits at the project site with ratings of low or very low susceptibility to liquefaction (ABAG 2022b).

The geotechnical investigation classified the project site as Seismic Design Category D (TT 2024e). The 2025 CBC, Section 1803, requires the project to conduct a site-specific geotechnical and geohazard investigation to evaluate, and recommend mitigation, for seismic-related ground failure (CBC 2025).

The geotechnical investigation concluded that the Latest Pleistocene Alluvial Fan Deposits that underlie the BESS and substation site have a low liquefaction risk (TT 2024e). CEC staff interprets the geotechnical investigation drew this conclusion because the subsurface soils and alluvium are dominantly fine-grained clays and silts. However, groundwater levels at the project site are shallow. In September 2023, the preliminary site-specific geotechnical investigation encountered shallow groundwater at depths of 7.5 ft to 15 ft bgs (TT 2024e).

The applicant conservatively concluded that liquefaction potential at the BESS, stormwater retention ponds, and substation sites is low to moderate (TT 2024c). CEC staff interprets the geotechnical investigation drew this conclusion because subsurface soils and alluvium at the project site are saturated, which increases liquefaction susceptibility. The geotechnical investigation proposed potential design, grading, and construction methods to mitigate the liquefaction potential of subsurface materials (TT 2024e).

The geotechnical investigation did not investigate the proposed gen-tie line route (TT 2024e). Geologic mapping indicates the same Latest Pleistocene Alluvial Fan Deposits that underlie the BESS, stormwater retention ponds, and substation site also underlie the gen-tie line route (CDOC 2009; TT 2024c). Based on the evaluation above, CEC staff interprets that subsurface materials under the gen-tie route also have low to moderate liquefaction potential.

Consistent with the CBC and local LORS, the applicant proposed to grade and construct the project following the recommendations in a final site-specific geotechnical and geohazard report (TT 2024c).

To inform the final design, grading, and construction of jurisdictional project components, COC **GEO-1** requires the project owner to complete and submit a final geotechnical and geohazard report to the CEC for review and approval. The CBC requires that the final geotechnical and geohazard report include final grading and facility design refinements to mitigate potential impacts from seismic-related ground failure to less than significant. COC **GEO-1** requires the project owner to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with COC **GEO-1**, Facility Design COCs **CIVIL-1, GEN-1**, and **STRUC-1**, the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS would ensure the final design, grading, and construction of jurisdictional project components would mitigate potential impacts from seismic-related ground failure on human life, property, and grid reliability to less than significant.

Based on the evaluation above, construction of non-jurisdictional project components, such as PG&E's gen-tie line segment, would occur on Latest Pleistocene Alluvial Fan Deposits that have low to moderate liquefaction susceptibility.

To inform the final design, grading, and construction of non-jurisdictional project components, CEC staff recommends compliance with **MM GEO-1**. **MM GEO-1** requires PG&E to complete a final geotechnical and geohazard report. The CBC requires that the final geotechnical and geohazard report include final grading and facility design refinements to mitigate hazards from seismic-related ground failure to less than significant. **MM GEO-1** requires PG&E to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with **MM GEO-1**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable LORS would ensure the final design, grading, and construction of non-jurisdictional project components would mitigate potential impacts from seismic-related ground failure on human life, property, and grid reliability to less than significant.

Based on the evaluation above, implementation of COCs and MMs would ensure that potential impacts related to seismic-related ground failure during project operation including on human life, property, and grid reliability, would be less than significant.

iv. Landslides?

Jurisdictional Project Components

Construction and Operation

Less Than Significant Impact with Mitigation Incorporated. Mass wasting, including landslides, is a geologic hazard that occurs when a slope fails. Slope stability depends on the shear strength of rock and soil, natural and artificial support, and saturation. Seismic shaking and intense precipitation may trigger mass wasting because these natural events may destabilize slopes.

The CGS has not evaluated the Allendale 7.5' topographic quadrangle nor adjacent quadrangles for landslide hazard zones (CDOC 2024). Comprehensive landslide mapping of the Vacaville area shows the project site is distal from landslides that have occurred outside the project site (CDOC 2009). The CGS Map Sheet 58 and ABAG Hazard Viewer classified the project site as class 0 for landslide susceptibility and flat land, respectively (ABAG 2020; CDOC 2011).

The preliminary site-specific geotechnical investigation classified the project site as Seismic Design Category D (TT 2024e). The 2025 CBC, Section 1803, requires the project to conduct a site-specific geotechnical and geohazard investigation to evaluate, and recommend mitigation, for slope instability (CBC 2025).

The application stated the project is on flat ground with a 0.2 percent slope to the east (TT 2024c). Grading and construction of the BESS, gen-tie line, and substation would occur on nearly flat ground and would not include grading nor construction of new permanent artificial slopes (TT 2024a, 2026a). CEC staff concludes that the construction

and operation of the BESS, gen-tie line, and substation would have no impacts related to slope stability.

The design, grading, construction, and operation of two stormwater retention ponds would introduce new artificial slopes to the project site. The proposed surface areas of the northern and southern stormwater retention ponds would be 1.5 acres and 1.2 acres, respectively. The proposed volumes of the northern and southern stormwater retention ponds would be 258,360 cubic ft and 201,841 cubic feet, respectively. Both ponds would be five ft deep. The applicant would construct the stormwater retention ponds in compliance with applicable state and Solano County LORS (TT 2026a, 2026j).

To inform the project's final design, grading, and construction, COC **GEO-1** requires the project owner to complete and submit a final geotechnical and geohazard report to the CEC for review and approval. The CBC requires that the final geotechnical and geohazard report include final grading and facility design refinements to mitigate potential impacts related to slope instability to less than significant. COC **GEO-1** requires the project owner to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with COC **GEO-1**, Facility Design COCs **CIVIL-1, GEN-1**, and **STRUC-1**, the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS would ensure the final design, grading, construction, and operation of jurisdictional project components would mitigate potential impacts related to slope instability on human life, property, and grid reliability to less than significant.

Non-Jurisdictional Project Components

Construction and Operation

Less Than Significant Impact with Mitigation Incorporated. Based on the evaluation above, construction of non-jurisdictional project components, such as PG&E's gen-tie line segment, would occur on flat ground, distal from offsite landslides and may have no impacts related to slope instability. However, CEC staff conservatively assumes that PG&E may grade and construct new permanent artificial slopes for these project components.

To inform the final design, grading, and construction of non-jurisdictional project components, CEC staff recommends compliance with **MM GEO-1**. **MM GEO-1** requires PG&E to complete a final geotechnical and geohazard report. The CBC requires that the geotechnical and geohazard report include final grading and facility design refinements to mitigate impacts related to slope instability to less than significant. **MM GEO-1** requires PG&E to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with **MM GEO-1**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable LORS would ensure the project's final design, grading,

construction, and operation would mitigate potential impacts related to slope instability on human life, property, and grid reliability to less than significant.

b. Would the project result in substantial soil erosion or the loss of topsoil?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Construction and operation of a new project may increase the potential for water and wind to erode soil. The impact of project construction on soil erosion and topsoil loss depends on hydrology, soil erodibility, construction methods, and schedule. During project operation, the impacts from and on soil erosion depend on stormwater management methods during the life of a project.

The project site is nearly flat. Stream channels do not intersect the project site. Precipitation at the project site travels as overland flow or infiltrates into the subsurface (TT 2024c). Project construction has the potential to impact soil erosion and topsoil loss. During project construction and operation, stormwater runoff has the potential to cause soil erosion.

The project would add 19.1 acres of impervious surface to the project site. The project's grading would route stormwater as overland flow into two new unlined drainage ditches. The drainage ditches would flow into two new unlined stormwater retention ponds. The project's grading would also route stormwater as overland flow directly into the stormwater retention ponds (TT 2026a). Water and wind erosion calculations were performed on behalf of the applicant to compare erosion rates under existing conditions versus if the project were constructed and operated (TT 2024e).

The applicant designed the drainage ditches and stormwater retention ponds to capture the peak discharge that is anticipated to occur at the project site during the peak 24-hours of precipitation during a 100-year storm event. The stormwater retention ponds also would include excess storage capacity for the increased overland flow at the project site that would result from the proposed construction of 19.1 acres of new impervious area. Stormwater would exit the stormwater retention ponds as infiltration into the subsurface. If a stormwater retention pond were to reach capacity, water would exit through one spillway weir and travel as overland flow for about 100 ft to an existing drainage ditch on the western side of Byrnes Road (TT 2026a).

The applicant stated its stormwater management plan would be in conformance with applicable LORS related to soil erosion, such as a NPDES Construction General Permit, the Solano County Code, and the Vacaville Municipal Code (TT 2024c).

The applicant concluded that, during construction, mitigation would maintain soil erosion rates similar to existing conditions. The applicant also concluded that, during

operation, soil erosion rates would be less than under existing conditions (TT 2024c). CEC staff agrees with these conclusions.

To ensure the final design, grading, and construction of jurisdictional project components would mitigate potential impacts related to soil erosion and topsoil loss, CEC staff proposes Water Resources COCs **WATER-1**. COC **WATER-1** requires the project owner to fulfill the requirements in a State Water Resources Control Board NPDES Construction General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities to manage stormwater during project construction.

To mitigate potential impacts related to soil erosion and topsoil loss during operation of jurisdictional project components, CEC staff proposes COC **WATER-2**. COC **WATER-2** requires the project owner to prepare and implement a site-specific Drainage, Erosion, and Sedimentation Control Plan (DESCP) to manage stormwater during project operation.

During construction and operation of jurisdictional project, compliance with COCs **WATER-1** and **WATER-2** would mitigate potential impacts related to substantial soil erosion or loss of topsoil to less than significant.

Based on the evaluation above, construction and operation of non-jurisdictional project components may impact, or be impacted by, soil erosion.

For construction and operation of non-jurisdictional project components, PG&E proposed stormwater management construction measures to comply with applicable LORS to mitigate potential impacts related to substantial soil erosion. See **Appendix C** for PG&E's proposed construction measures for stormwater management. CEC staff recommends PG&E comply with these construction measures and all applicable LORS.

During construction and operation of non-jurisdictional project components, compliance with PG&E's proposed construction measures and all applicable LORS would mitigate potential impacts related to soil erosion to less than significant.

For more information, see **Section 5.16, Water Resources**.

c. Would the project be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?

Landslide

Construction and Operation

Less Than Significant with Mitigation Incorporated. A project can increase slope instability if inappropriate grading and construction methods are used. For example, poor grading and construction methods, such as loading the top of a slope, removing support from the sides or bottom of a slope, or increasing soil saturation, may destabilize slopes.

As discussed earlier, the project would include grading, construction, and operation of artificial slopes for two stormwater retention ponds (TT 2026a). Based on the evaluation above, compliance with COC **GEO-1**,Facility Design COCs **CIVIL-1, GEN-1**, and **STRUC-1**, the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS would ensure the design, grading, and construction of jurisdictional project components would mitigate potential impacts from project grading, construction, and operation on slope stability to less than significant.

As discussed above, CEC staff conservatively assumes that PG&E may grade and construct artificial slopes for non-jurisdictional project components. Based on the evaluation above, CEC staff recommends that PG&E comply with **MM GEO-1**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable LORS for the final design, grading, and construction of non-jurisdictional project components. Consistency with these requirements would mitigate potential impacts on slope stability from the construction and operation of non-jurisdictional project components to less than significant.

Liquefaction and Lateral Spreading

Construction and Operation

Less Than Significant with Mitigation Incorporated. A project can increase the liquefaction and lateral spreading potential of subsurface materials if inappropriate grading, construction, or operation methods are used. For example, increasing the moisture content of soils below a project may increase liquefaction potential. As evaluated above, soils with low to moderate liquefaction potential underlie the project.

Project construction would add 19.1 acres of new impervious surface and two stormwater retention ponds on the project site (TT 2026a). Based on the evaluation above, and in **Section 5.16, Water Resources**, CEC staff concludes that construction and operation of project's proposed stormwater management system would not significantly increase groundwater infiltration rates at the project site.

Compliance with COC **GEO-1**, Facility Design COCs **CIVIL-1, GEN-1**, and **STRUC-1**, the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS, would ensure the final design, grading, construction, and operation of jurisdictional

project components would mitigate potential impacts on seismic-related ground failure hazards to less than significant.

Based on the evaluation above, CEC staff recommends that PG&E comply with **MM GEO-1**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable LORS for the final design, grading, and construction of non-jurisdictional project components. Consistency with these requirements would mitigate potential impacts on seismic-related ground failure hazards from the construction and operation of non-jurisdictional project components to less than significant.

Soil Settlement

Construction and Operation

Less Than Significant with Mitigation Incorporated. Soil settlement, including differential soil settlement, is a geologic hazard where soils compress across a site. Differential settlement occurs when soils compress by varying amounts at different locations. Differential settlement can cause damage to site's foundations, utilities, and more. The potential for soil settlement depends on the soil thickness, soil characteristics, including stiffness modulus and compression indices, construction methods, and static and dynamic loading.

The preliminary site-specific geotechnical investigation classified the project site as Seismic Design Category D (TT 2024e). The 2025 CBC, Section 1803, requires the project to conduct a site-specific geotechnical and geohazard investigation to evaluate, and recommend mitigation, for total and differential soil settlement (CBC 2025).

The geotechnical investigation observed that surficial clay soils at the proposed site for the BESS, substation, and stormwater retention ponds have a low to moderate soil settlement potential. The geotechnical investigation calculated that total soil settlement of 1.5 inches to 2 inches may occur during project operation (TT 2024e).

In addition, CEC staff conservatively assumes that project construction and operation would place natural soils and engineered fill across the project under varying static loads. Seismic shaking may cause soils, sediments, and engineered fill across the project site to experience varying dynamic loads that may cause differential soil settlement.

The geotechnical investigation did not evaluate the gen-tie line route (TT 2024e). Geologic mapping indicates the same Latest Pleistocene Alluvial Fan Deposits that underlie the site for the BESS, substation, and stormwater retention ponds also underlie the gen-tie line route (CDOC 2009; TT 2024c). Based on the evaluation above, CEC staff interprets low to moderate soil settlement potential for the soils and sediments that underlie the gen-tie line route.

The geotechnical investigation proposed options for grading and foundations that would mitigate potential impacts from project construction and operation on soil settlement (TT 2024e). Consistent with the CBC and local LORS, the applicant proposed to grade and construct the project following recommendations in a final site-specific geotechnical and geohazard report (TT 2024c).

To inform the final design, grading, and construction of jurisdictional project components, COC **GEO-1** requires the project owner to complete and submit a final geotechnical and geohazard report to the CEC for review and approval. The final geotechnical and geohazard report should include final grading and facility design refinements to mitigate potential impacts related to soil settlement hazards to less than significant. COC **GEO-1** requires the project owner to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with COC **GEO-1**, Facility Design COCs **CIVIL-1, GEN-1**, and **STRUC-1**, the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS, would ensure the design, grading, and construction of jurisdictional project components would mitigate potential impacts on soil settlement to less than significant.

Based on the evaluation above, non-jurisdictional project components would be constructed and operated on subsurface materials that have low to moderate soil settlement potential. To inform the final design, grading, and construction of non-jurisdictional project components, CEC staff recommends compliance with **MM GEO-1**. **MM GEO-1** requires PG&E to complete a final geotechnical and geohazard report. The CBC requires that the final geotechnical and geohazard report include final grading and facility design refinements to mitigate impacts related to soil settlement to less than significant. **MM GEO-1** requires PG&E to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with **MM GEO-1**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable LORS would ensure the final design, grading, and construction of non-jurisdictional project components would mitigate potential impacts related to soil settlement to less than significant.

Based on the evaluation above, implementation of COCs and MMs would ensure that potential impacts related to soil settlement during project operation would be less than significant.

Subsidence

Construction and Operation

Less Than Significant Impact. Subsidence is the gradual settling of the ground surface in response to the movement of material belowground. Natural processes that may cause subsidence include soil compaction, sinkhole formation, and earthquakes. Artificial activities that may cause subsidence include removal or addition of material

belowground, such as groundwater pumping, hydraulic fracturing, mining, and oil extraction.

The project site is not in a location where artificial subsidence has occurred or is occurring (USGS 2018; Solano Collaborative 2025). CEC staff evaluated the project's potential impacts on subsidence rates in the Solano subbasin.

Construction of jurisdictional project components would use a maximum of 30 acre-feet (AF) of water. Operation of jurisdictional project components would use a maximum of two AF of water per year (AFY) for up to five years. Water demand during project operation would be for temporary landscaping (TT 2024c).

To supply water for jurisdictional project components, the project would purchase surface water from the Solano Irrigation District or pump groundwater onsite (TT 2024c). CEC staff conservatively assumes that the project's entire water demand would be met from onsite groundwater pumping.

The Solano subbasin's sustainable yield is estimated at 180,000 AFY. Groundwater storage in the Solano subbasin has been stable. The Solano subbasin is forecast to have sufficient existing water supply to meet the project's proposed water demand (TT 2024c). The project's water demand would be negligible relative to the Solano Subbasin's sustainable yield. The project would not significantly lower groundwater elevations in the Solano subbasin and thus would not cause land subsidence.

Moreover, as discussed in **Section 5.16, Water Resources**, CEC staff proposes Water Resources COC **WATER-3** to mitigate potential impacts from groundwater pumping. Compliance with COC **WATER-3** would further ensure that the potential impacts from project construction, operation, and decommissioning related to subsidence are less than significant.

To supply water for construction and operation of non-jurisdictional project components, CEC staff recommends that PG&E comply with applicable LORS, including the SGMA. Consistency with these requirements would further ensure potential impacts related to subsidence would be less than significant.

See **Section 5.16, Water Resources**, for more information.

d. Would the project be located on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2025), creating substantial direct or indirect risks to life or property?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Expansive soil behavior is a phenomenon where clay soils react to changes in moisture content by expanding or contracting. Poorly drained soils have greater shrink-swell potential. Potential causes of

moisture fluctuations include drying during construction, and subsequent wetting from rain, capillary rise, landscape irrigation, and types of vegetation onsite. Untreated expansive soils may damage future overlying buildings, utilities, and pavements.

The 2025 CBC, Section 1803, requires the project to conduct a site-specific geotechnical and geohazard investigation to evaluate, and recommend mitigation, for expansive soils (CBC 2025). The preliminary site-specific geotechnical investigation identified expansive soils at the project site (TT 2024e).

The geotechnical investigation observed that surficial clay soils at the site for the BESS, substation, and stormwater retention ponds have a moderate to high expansion potential when subjected to varying amounts of moisture. The geotechnical investigation concluded expansive soils at the project site would pose a moderate to high risk to the project. Shrinking and swelling of these expansive clays could cause the project's foundations to crack or become uneven (TT 2024e).

The geotechnical investigation observed that moisture variation occurs in clay soils down to depths of 3 ft bgs. The geotechnical investigation calculated the potential vertical rise (PVR), or potential for expansive soils to swell from their current state, at 1.5 inches. A PVR value of 1.5 inches exceeds the commonly accepted PVR value of one inch for a shallow foundation, floor slab-on-grade system, or stiffened beam and slab foundation, which may be used for the proposed project (TT 2024e).

The geotechnical investigation did not investigate the proposed gen-tie line route (TT 2024e). Geologic mapping indicates the same Latest Pleistocene Alluvial Fan Deposits and soil types that underlie the site for the BESS, stormwater retention ponds, and substation also underlie the gen-tie line route (CDOC 2009; TT 2024c). Based on the evaluation above, CEC staff interprets that soils under the gen-tie line route also have moderate to high expansive soil potential.

The geotechnical investigation proposed earthwork actions, including subgrade improvement and fill placement, to mitigate potential impacts from expansive soils. These grading actions would remove and replace shallow clays that have shrink-swell potential (TT 2024e). Consistent with the CBC and local LORS, the applicant proposed to grade and construct the project following the recommendations in a final site-specific geotechnical and geohazard report (TT 2024c).

To inform the final design, grading, and construction of jurisdictional project components, COC **GEO-1** requires the project owner to complete and submit a final geotechnical and geohazard report to the CEC for review and approval. The CBC requires that the final geotechnical and geohazard report include final grading and facility design refinements to mitigate potential impacts from expansive soil hazards. COC **GEO-1** requires the project owner to incorporate the final geotechnical and geohazard report report's recommended refinements into the final project design.

Compliance with COC **GEO-1**,Facility Design COCs **GEN-1, CIVIL-1**, and **STRUC-1**, the CBC, Solano County Code, and Vacaville Municipal Code, and all other applicable LORS, would ensure the final design, grading, and construction of jurisdictional project components would mitigate potential impacts from expansive soils on the project, including direct and indirect risks to human life, property, and grid reliability, to less than significant.

Based on the evaluation above, construction of non-jurisdictional project components would occur on soils with a moderate to high expansive soil potential. To inform the final design, grading, and construction of non-jurisdictional project components, CEC staff recommends compliance with **MM GEO-1**. **MM GEO-1** requires PG&E to complete a final geotechnical and geohazard report. The CBC requires that the final geotechnical and geohazard report include final grading and facility design refinements to mitigate impacts related to expansive soils to less than significant. **MM GEO-1** requires PG&E to incorporate the final geotechnical and geohazard report's recommended refinements.

Compliance with **MM GEO-1**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable LORS would ensure the final design, grading, and construction of non-jurisdictional project components would mitigate potential impacts related to expansive soils to less than significant.

Based on the evaluation above, implementation of COCs and MMs would ensure that potential impacts related to expansive soils during project operation would be less than significant.

e. Would the project have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

Construction and Operation

Less Than Significant Impact. During construction of jurisdictional project components, sanitary wastewater production would be limited to temporary chemical toilets that a third-party contractor would service. Chemical toilet waste would be trucked offsite (TT 2024l).

The proposed project would be operated remotely and thus it would not include an onsite operations and maintenance building. During major maintenance activities, sanitary wastewater production would be limited to temporary chemical toilets that a third-party contractor would service (TT 2024l).

During construction and operation of jurisdictional project components, no sanitary wastewater would be discharged at or near the project site (TT 2024l). Sanitary wastewater produced during construction and operation of jurisdictional project components would have less than significant impacts on soils and comply with applicable LORS, including the Solano County Code and Vacaville Municipal Code.

During construction and operation of non-jurisdictional project components, CEC staff recommends PG&E staff would use existing sanitary facilities at the Vaca-Dixon Substation or temporary chemical toilets that a third-party vendor would service. CEC staff has no reason to believe additional facilities would be required after construction. Sanitary wastewater produced during the construction and operation of non-jurisdictional project components would have less than significant impacts on soils and comply with applicable LORS, including the Solano County Code and Vacaville Municipal Code.

See **Section 5.16, Water Resources**, for more information.

f. Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?

Construction and Operation

Less Than Significant with Mitigation Incorporated. The site-specific paleontological investigation reviewed online paleontological collection databases, geologic and geotechnical information, primary literature, and conducted a field survey of the project site. The records search did not find known fossil localities at the project site. The field survey did not observe fossil localities at the project site (TT 2024l).

The paleontological investigation used the BLM's PFYC system to assign paleontological potentials that are mapped at the surface of the project site or may be encountered in the subsurface (TT 2024l).

CEC staff reviewed the Application Section 4.7 Geology, Soils, and Paleontological Resources (TT 2024c), the site-specific paleontological investigation (TT 2024l), and additional fossil locality information in the UCMP Locality Database (UCMP 2026). CEC staff used SVP (2010) standards to assign paleontological potential ratings to each geologic unit that is mapped at the surface within two miles of the project or may be encountered in the subsurface at the project site. Paleontological potential ratings are summarized in **Table 5.6-3**.

The paleontological investigation did not evaluate Latest Holocene Alluvial Fan Levee Deposits (Qhly) (TT 2024l). These deposits are unlikely to contain preserved fossils because they are less than 1,000 years old. CEC staff assigns Latest Holocene Alluvial Fan Levee Deposits (Qhly) low potential for paleontological resources.

The paleontological investigation assigned Latest Pleistocene Alluvial Fan Deposits (Qpf) moderate to high paleontological potential. There is evidence that Quaternary surficial sedimentary deposits of these ages and depositional setting in Solano County, the San Francisco Bay Region, and the Sacramento Valley contain vertebrate and invertebrate fossils. For example, the UCMP Locality Database lists fossil localities of extinct Late Pleistocene land mammals, amphibians, birds, and reptiles in Holocene through Pleistocene alluvial fan deposits in the region (TT 2024l).

CEC staff agrees and assigns the Latest Pleistocene Alluvial Fan Deposits a high paleontological sensitivity. Due to similarities in age and depositional setting, CEC staff assigns Holocene Alluvial Fan Deposits (Qhf) a low paleontological potential at the surface and high paleontological potential with increasing depth and age.

The paleontological investigation assigned the Pleistocene Modesto Formation a moderate to high paleontological sensitivity (TT 2024l). The UCMP Locality Database reports the formation contains fossil localities for extinct Pleistocene land mammals, gastropods, and plants (UCMP 2026). CEC staff agrees and assigns the Modesto Formation a high paleontological sensitivity.

The paleontological investigation did not evaluate the Pliocene Tehama Formation (Pth) (TT 2024l). The UCMP Locality Database reports the formation contains fossil localities for extinct Pliocene land mammals (UCMP 2026). CEC staff assigns the Tehama Formation a high paleontological sensitivity.

TABLE 5.6-3 PALEONTOLOGICAL POTENTIAL OF GEOLOGIC UNITS

Geologic Unit	Geologic Map Abbreviation	Paleontological Potential
Latest Holocene Alluvial Fan Levee Deposits	Qhly	Low potential
Holocene Alluvial Fan Deposits	Qhf	Low potential at the surface, increasing to high potential with depth
Latest Pleistocene Alluvial Fan Deposits	Qpf	High potential
Pleistocene Modesto Formation	Qm	High potential
Pliocene Tehama Formation	Pth	High potential

The applicant proposed project design measures PD GEO-1, PD GEO-2, and PD GEO-3 to mitigate potential impacts to paleontological resources (TT 2024c).

For the grading and construction of jurisdictional project components, CEC staff proposes COCs **PAL-1** through **PAL-8** to address the potential for the discovery of paleontological resources during excavation in Quaternary surficial sedimentary deposits and Pleistocene and Pliocene rock formations.

Construction of non-jurisdictional project components within the Vaca-Dixon Substation would not include ground disturbing activities and would have no impact on paleontological resources.

For the grading and construction of non-jurisdictional project components, PG&E proposed construction measures to mitigate potential impacts on paleontological resources. See **Appendix C** for PG&E's proposed construction measures for the protection of paleontological resources. CEC staff recommends that PG&E comply with **MM PAL-1** through **MM PAL-8**, which would clarify roles, responsibilities, and

procedures. With mitigation, potential impacts from project construction on paleontological resources would be less than significant.

Geological features are the result of geological processes, natural processes that occur above and below the Earth's surface. Geological features that are unusual may be unique geologic resources of commercial, recreational, or scientific value. No unique geologic features were mapped or identified at or near the project site (TT 2024c). The Quaternary surficial deposits and Pleistocene and Pliocene rock formations that are mapped at the surface within two miles of the project, or may be encountered in the subsurface, are common in Solano County and the Sacramento Valley (CDOC 2009). Project construction would have no impact unique geological features of commercial, recreational, and scientific value.

Ground disturbing activities would not occur during the operation of jurisdictional and non-jurisdictional project components. Project operation would have no impact on paleontological resources and unique geological features and resources of recreational or scientific value.

Based on the evaluation above, implementation of COCs and MMs would ensure that potential impacts on paleontological resources from project construction and operation would be less than significant.

g. Would the project result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State?

Construction and Operation

No impact. Production of mineral and fossil fuel resources significantly contributes to Solano County's economy (Solano County 2008). The project site is an area that the CGS has classified as MRZ-1 because geologic information indicates that significant concrete aggregate resources are not present (CDOC 2018b).

As described above, the Quaternary surficial deposits and Pleistocene and Pliocene rock formations that are mapped at the surface, and may be encountered in the subsurface, at project site are widespread in Solano County and the Sacramento Valley (CDOC 2009). The geologic units are not unique in terms of commercial, recreational, or scientific value. The construction and operation of jurisdictional and non-jurisdictional project components would have no impacts on mineral resources of commercial, recreational, or scientific value.

h. Would the project result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?

Construction and Operation

No Impact. As evaluated above, locally important mineral and fossil fuel resources are extracted in Solano County (Solano County 2008). Consistent with the SMARA, the CGS classifies mineral lands as MRZs based on the importance and availability of local mineral deposits (CDOC 2000). The CGS has classified the area containing the proposed project as MRZ-1 because significant concrete aggregate resources are not present (CDOC 2018b).

The closest active or potentially active mines to the project are at least 12 miles away (CDOC 2016). The closest inactive mines to the project are quarries and borrow pits in Vacaville (USGS 2011). There are no energy production-related wells on the project site. The closest energy production related wells are two plugged and abandoned wells that are two miles to three miles away from the project (CDOC 2026a).

As evaluated above, grading and construction would disturb Quaternary surficial deposits, and potentially Pleistocene and Pliocene rock formations, that are common in the region. CEC staff concludes that grading and construction for jurisdictional and non-jurisdictional project components would have less than significant impacts on locally important mineral resource recovery sites.

The operation of jurisdictional and non-jurisdictional project components would not include ground disturbing activities. Project operation would have no impact on locally important mineral resource recovery sites.

5.6.2.3 Cumulative Impacts

A cumulative impact refers to a proposed project's incremental effect together with other closely related past, present, and reasonably foreseeable future projects whose impacts may compound or increase the incremental effect of the project. The proposed project may have cumulative impacts if the incremental effect of the project is considerable when viewed in connection with other past, present, and reasonably foreseeable future projects (PRC, § 21083; CCR, Title 14, §§ 15064(h), 15065(c), 15130, and 15355).

Geologic Hazards

The proposed project would be constructed and operated in northeastern Solano County, a seismically active environment. Geologic hazards are generally site-specific and depend on localized geologic and soil conditions. Potential geologic hazards that are expected to impact, or be impacted by the project, include strong seismic ground shaking, seismically induced ground failure, soil erosion, unstable geologic units, and expansive soils. Potential impacts related to geologic hazards would be mitigated to less than significant through appropriate design, grading, and construction.

The applicant completed a preliminary site-specific geotechnical investigation that made design, grading, and construction recommendations to mitigate potential impacts from,

and on, geologic hazards. The preliminary site-specific geotechnical investigation recommended that final geotechnical evaluations be conducted to inform final project's design, grading, and construction (TT 2024e). To inform the final design, grading, and construction of jurisdictional project components, COC **GEO-1** requires the project owner to complete and submit a final geotechnical and geohazard report to the CEC for review and approval. The CBC requires the final geotechnical and geohazard report to include final grading and facility design refinements to mitigate the impacts of geologic hazards on the project, and the project's impacts on geologic hazards, to less than significant. COC **GEO-1** requires the project owner to incorporate the final geotechnical and geohazard report's recommended mitigation into the project's final design, grading, and construction.

For jurisdictional project components, compliance with COC **GEO-1**, Facility Design COCs **GEN-1, CIVIL-1**, and **STRUC-1**, Water Resources COCs **WATER-1** through **WATER-3**, the CBC, Solano County Code, the Vacaville Municipal Code, and all other applicable federal, state, and local LORS, would mitigate potential impacts related to geologic hazards to less than significant.

For non-jurisdictional project components, PG&E's compliance with **MM GEO-1**, PG&E's proposed construction measures, and all applicable LORS would ensure mitigation of all potential impacts related to geologic hazards to less than significant.

Due to the lack of onsite septic tanks or permanent alternative sanitary wastewater disposal, CEC staff does not propose COCs or MMs related to sanitary wastewater and soils. Compliance with the CBC, Solano County Code, the Vacaville Municipal Code, and all applicable federal, state, and local LORS, would mitigate potential impacts from sanitary wastewater disposal on soils to less than significant.

As is required for the project, cumulative projects in the area are required to comply with applicable LORS related to geologic hazards. For other projects, adherence to all LORS pertaining to building safety and construction would mitigate cumulative impacts related to geologic hazards to less than significant.

Thus, compliance with CEC staff's proposed COCs and MMs would prevent the proposed project from having considerable cumulative impacts related to geologic hazards.

Geologic, Mineral, and Paleontological Resources

Project grading and construction may encounter significant paleontological resources. Compliance with COCs **PAL-1** through **PAL-8, MMs PAL-1** through **PAL-8,** PG&E's proposed construction measures, and all applicable federal, state, and local LORS would protect and preserve significant paleontological resources. Compliance with CEC staff's proposed COCs and MMs would prevent the proposed project from having considerable cumulative impacts on paleontological resources.

As is required for the project, cumulative projects in the area are required to comply with applicable LORS related to geologic, mineral, and paleontological resources. For other projects, adherence to all LORS pertaining to geologic, mineral, and paleontological resources would mitigate considerable cumulative impacts on these resources to less than significant.

No unique surface or near surface geologic features nor resources of commercial, recreational, and scientific value, including mineral resources, were identified in the project area. Development of this project would have no impact on geologic and mineral resources in the project area.

Thus, compliance with CEC staff's proposed COCs and MMs would prevent the proposed project from having considerable cumulative impacts related to geologic, mineral, or paleontological resources.

5.6.3 Project Conformance with Applicable LORS

Table 5.6-4 lists CEC staff's determination of conformance with applicable federal, state, and local LORS, including applicable proposed COCs, to ensure that the jurisdictional project components would conform with LORS. As the table summarizes, CEC staff concludes that with implementation of specific COCs, the proposed project would conform with all applicable LORS. Subsection 5.6.5, below, contains the full text of COCs **GEO-1** and **PAL-1** through **PAL-8**.

The full text of COCs **GEN-1, CIVIL-1**, and **STRUC-1** is in **Section 4.1, Facility Design**. The full text of COCs **WATER-1** through **WATER-3** is in **Section 5.16, Water Resources**.

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
State	
The 1972 **Alquist-Priolo Earthquake Fault Zoning Act** requires the California Geological Survey to designate Alquist-Priolo Fault Zones, which are active faults that have evidence of surface rupture in the past 11,000 years. The act mitigates against surface fault rupture of known active faults beneath occupied structures. The act requires disclosure to potential buyers of existing real estate and a 50-foot setback for new occupied buildings. Portions of the site and proposed ancillary facilities are located within designated Alquist-Priolo Fault Zones. The proposed site layout places occupied structures outside of the 50-foot setback zone (PRC 2026a).	**Yes.** Compliance with COCs **GEO-1, CIVIL-1, STRUC-1**, would ensure the proposed project complies with the Alquist-Priolo Earthquake Fault Zoning Act's laws and regulations.
The 2025 **California Building Code** includes a series of standards that are used in project investigation, design, and construction (including seismicity, grading and erosion control). The CBC	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
has adopted provisions in the International Building Code (CBC 2025).	complies with the California Building Code's standards and provisions.
The **California Public Resources Code, Division 5, Chapter 1.7 Archaeological, Paleontological, and Historical Sites** prohibits the removal of paleontological resources from public lands under the jurisdiction of the state, or any city, county, district, authority, or public corporation, or any agency thereof.	**Yes.** This section does not apply because the project site is privately owned. However, compliance with COCs **PAL-1** through **PAL-8** would ensure potential impacts on paleontological resources are less than significant.
The 1990 **Seismic Hazards Mapping Act** requires the California Geological Survey to identify areas (zones) that are subject to the effects of strong ground shaking, such as liquefaction, landslides, tsunamis, and seiches. Requires a geotechnical report be prepared that defines and delineates any seismic hazard prior to approval of a project in a seismic hazard zone (PRC 2026b).	**Yes.** Compliance with COCs **GEO-1, CIVIL-1**, and **STRUC-1** would ensure the proposed project complies with the Seismic Hazards Mapping Act's laws and regulations.
The 1975 **Surface Mining and Reclamation Act** provides a comprehensive surface mining and reclamation policy for the regulation of surface mining operations to assure that adverse environmental impacts are minimized and mined lands are reclaimed to a usable condition (PRC 2026c).	**Yes.** The project would have no impacts on known valuable mineral resources or locally important mineral resource recovery sites.
Local	
Solano County General Plan (2008), Chapter Four, Resources	
Goal RS.G-1: Manage and preserve the diverse land, water, and air resources of the county for the use and enrichment of the lives of present and future generations.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with the relevant goals, policies, and implementation programs in Chapter Four of the Solano County General Plan.
Goal RS.G-2: Ensure continued presence and viability of the county's various natural resources.	
Goal RS.G-4: Preserve, conserve, and enhance valuable open space lands that provide wildlife habitat; conserve natural and visual resources; convey cultural identity; and improve public safety.	
Goal RS.G-10: Foster sound management of the land and water resources in Solano County's watersheds to minimize erosion and protect water quality using best management practices and protect downstream waterways and wetlands.	
Policy RS.P-33: The County shall preserve, for future use, areas with important mineral resources by preventing residential, commercial, and industrial development that would be	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
incompatible with mining practices to the extent feasible.	
Policy RS.P-34: Ensure that mineral extraction operations are performed in a manner compatible with land uses on the site and surrounding area and do not adversely affect the environment. At the end of such operations, ensure that the site is restored to conform with Surface Mining and Reclamation Act requirements and to a use compatible with surrounding land uses.	
Implementation Program RS.I-16: Designate land uses in mineral areas appropriately to ensure compatibility between mineral extraction and surrounding uses.	
Implementation Program RS.I-17: Evaluate impacts related to extracting mineral resources from new areas as part of the required permitting process to ensure that remediation occurs after minerals are extracted. Comply with regulations found in the Surface Mining and Reclamation Act.	
Solano County General Plan (2008), Chapter Five, Public Health and Safety	
Goal HS.G-1: Minimize risk to property and protect lives from flood hazards.	**Yes.** Compliance with the COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the project complies with relevant goals, policies, and implementation programs in Chapter Five of the Solano County General Plan.
Policy HS.P-1: Prevent or correct current upstream land use practices that contribute to increased rates of surface water runoff.	
Policy HS.P-6: Require new developments to incorporate design and construction of on-site stormwater detention caused by a 100-year storm event and contribute to regional solutions to improve flood control, drainage, and water recharge.	
Implementation Program HS.I-2: During discretionary project review, require the use of stormwater management techniques in developed upstream watershed areas that protect low-lying areas from flooding. As feasible, consider an integrated and multi-benefit approach to stormwater management techniques incorporating opportunities to increase water supply, improve environment, and enhance ecosystems. Incorporate appropriate measures into the proposed project design to mitigate flooding and prevent erosion.	
Implementation Program HS.I-3: Work with the Solano County Water Agency (or successor agency) to review existing developments	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
contributing to increased runoff and to reduce runoff wherever possible.	
Implementation Program HS.I-4: Through the discretionary review process, ensure new developments incorporate landscaping design practices and plants that will reduce demand on water, retain runoff, decrease flooding, and recharge groundwater. As feasible, consider a holistic and multi-benefit approach to new development incorporating opportunities to decrease flooding, increase water supply, improve environment, and enhance ecosystems in an integrated manner.	
Goal HS.G-2: Avoid the loss of life and injury and minimize property damage from seismic and geologic hazards.	
Policy HS.P-20: Require new development in moderate or high seismic hazard areas to consider risks caused by seismic activity and to include project features that minimize these risks.	
Policy HS.P-21: Review and limit the location and intensity of development and placement of infrastructure in identified earthquake fault zones.	
Policy HS.P-22: Identify and minimize potential hazards to life and property caused by fault displacement and its impact on facilities that attract large numbers of people, are open to the public, or provide essential community services and that are within identified earthquake fault zones.	
Policy HS.P-23: Avoid and minimize risk of infrastructure systems failure and related impacts during seismic events through standards for the construction and placement of utilities, pipelines, or other public facilities on or crossing active fault zones.	
Policy HS.P-24: Require minimum setbacks for construction along creeks between the creek bank and structure, except for farm structures that are not dwellings or places of work, based on the susceptibility of the bank to lurching caused by seismic shaking.	
Policy HS.P-25: Restrict the crossing of ground failure areas by new public and private transmission facilities, including power and water distribution lines, sewer lines, and gas and oil transmission lines.	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Policy HS.P-27: Require proper foundation designs in areas with soils that have a high shrink-swell potential.	
Policy HS.P-28: Minimize development in areas with high landslide susceptibility.	
Policy HS.P-29: Minimize exposure to seismic and geologic hazards through site planning and building design for all new development, including subdivisions, new construction, and remodels or expansions of existing structures as well as critical, high-occupancy, or essential services buildings.	
Implementation Program HS.I-12: Require geotechnical investigation and recommendations for proposed development in geologic hazard areas, including landslide susceptibility areas and subsidence zones, as illustrated in Figures HS-11 and HS-12. A State-certified Engineering Geologist shall produce a report examining development issues that considers: • Soil, slope, or other geologic hazard conditions found on site; • Potential off-site development impacts, such as increased runoff and/or slope instability; and • Requirements of any regulations concerning the hazard area.	
Implementation Program HS.I-13: Require proposed development to conduct a geotechnical evaluation and incorporated recommendations into project design when located in moderate or higher-hazard areas. Such geotechnical evaluation shall analyze the potential hazards from: • Landslides • Liquefaction • Expansive soils • Steep slopes • Erosion • Subsidence • Alquist-Priolo Earthquake Fault Zones or other identified fault zones • Tsunamis • Seiches	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Require new development to incorporate project features that avoid or minimize the identified hazards. Costs related to providing or confirming required geotechnical reports will be borne by the applicant.	
Solano County General Plan (2008), Chapter Eight, Public Facilities and Services	
Goal PF.G-1: Provide adequate public services and facilities to accommodate the level of development planned by the County.	**Yes.** Compliance with the COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the project complies with the relevant goal, policies, and implementation programs in Chapter Eight of the Solano County General Plan.
Policy PF.P-3: Increase efficiency of water, wastewater, stormwater, and energy use through integrated and cost-effective design and technology standards for new development and redevelopment.	
Implementation Program PF.I-1: Use the County's Capital Improvement Program to identify, plan, and provide for future public facilities and improvements. Capital Improvement Program projects shall be reviewed annually for consistency with General Plan policies and coordinated with current and future development.	
Policy PF.P-18: The minimum lot size for properties to be served by individual on site wells and individual on site sewage disposal systems shall be five acres. Where cluster development is proposed with on site wells and sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater than five acres per parcel and that no individual parcel is less than one acre in size.	
Policy PF.P-19: The minimum lot size for properties to be served by public water service with individual on site sewage disposal systems shall be 2.5 acres. Where cluster development is proposed with public water service and on site sewage disposal systems, parcels may vary in size provided the overall density of the project is not greater 2.5 acres per parcel and that no individual parcel is less than one acre in size.	
Implementation Program PF.I-7: Maintain the Zoning Ordinance to specify minimum lot sizes for properties with on-site sewage and on-site wells.	
Policy PF.P-21: Sewage treatment and disposal services for development within the unincorporated area may be provided through private individual on-site sewage disposal systems, or centralized community treatment and disposal systems managed by a public	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
agency utilizing the best systems available that meet tertiary treatment or higher standards. Use of such centralized sewage treatment and disposal systems shall be limited to: (1) existing developed areas, (2) areas designated for commercial or industrial uses, (3) areas designated for residential development within Municipal Service Areas, or (4) areas designated for residential development outside of a Municipal Service Area when part of a specific plan or policy plan overlay.	
Policy PF.P-22: Ensure that new and existing septic systems and sewage treatment systems do not negatively affect groundwater quality.	
Policy PF.P-23: When reviewing development proposals, • Require septic systems to be located outside of primary groundwater recharge areas, or where that is not possible, require shallow leaching systems for disposal of septic effluent. • Require new septic systems or leach fields to be installed at least 100 feet away from natural waterways, including perennial or intermittent streams, seasonal water channels, and natural bodies of standing water. Make an exception for the repair of existing systems if the 100 foot setback area cannot be maintained and if adequate provisions are made for protecting water quality. • Require the use of alternative wastewater treatment techniques to respond to site characteristics, as determined by the California Department of Health Services and regional water quality control boards. • Require new development with septic systems to be designed so as to prevent nitrates and other pollutants of concern from septic disposal systems from impairing groundwater quality.	
Implementation Program PF.I-24: On-site sewage disposal systems for individual lots shall be operated by private property owners. The County or an incorporated homeowners association may manage a community sewage collection system, but a public agency other than the County shall manage a centralized community sewage treatment and disposal	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
system. If lands proposed to be served by a community sewage treatment and disposal system are not within the boundaries or service area of an existing public agency, the Board of Supervisors shall, as a condition of development, designate a public agency to provide and manage the public sewer service.	
Policy PF.P-33: Require development projects to minimize pollution of stormwater, water bodies receiving runoff, and groundwater, and to maximize groundwater recharge potential by: • implementing planning and engineering design standards that use low-impact development techniques and approaches to maintain and mimic the natural hydrologic regime; • using "infiltration" style low-impact development technologies; and • following stormwater best management practices during and after construction, in accordance with relevant state-required stormwater permits.	
Policy PF.P-34: Control the rate and dispersal of runoff from developments through use of detention and retention basins, appropriate landscaping, minimal use of impervious surfaces, and other stormwater facilities.	
Implementation Program PF.I-32: As a condition of project approval, require new development to provide adequate on-site and off-site stormwater and drainage facilities to control both direct and indirect erosion and discharges of pollutants and/or sediments so that "no net increase in runoff" occurs as a result of the proposed project. To determine the needs for facilities and best management practices, the County will require, when necessary, that a licensed and County-approved civil engineer perform a hydrological/drainage analysis. The project applicant would be responsible for the cost of this analysis. In cases where a local or regional drainage facility may be the best solution to serve multiple properties or an entire drainage basin, the County will work with property owners and public agencies with jurisdiction in the affected area to devise an appropriate funding mechanism (e.g., impact fees, assessment district) for such facilities.	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Policy PF.P-51: Encourage undergrounding of local utility distribution lines where feasible.	
Solano County Code (2025)	
Chapter 6.3, Building Standards and Codes. Adopts and amends the California Building Code. Identifies building and construction requirements to reduce hazard potential that are applicable to all new construction, including the project.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with Chapter 6.3 of the Solano County Code.
Chapter 6.4, Sewage Standards. Establishes ordinances for sewage systems in new construction, including on-site sewage disposal, to prevent environmental degradation and protect public health.	**Yes.** The project would not connect to an existing sewage system nor treat sanitary wastewater onsite. Therefore, the project would comply with Chapter 6.4 of the Solano County Code.
Chapter 25, Chemical Toilets, Sewage Pumping Trucks, Domestic Septage Land Application, and Biosolids Land Application. Establishes ordinances for chemical toilets, pumping trucks, and more, to prevent environmental degradation and protect public health.	**Yes.** The project would rely on chemical toilets during project construction and operation. Chemical toilet waste generated from project construction and operation would have less than significant on soils. The proposed project would comply with Chapter 25 of the Solano County Code.
Chapter 29, Surface Mining and Reclamation. Incorporates and implements the SMARA and related state regulations, with additional more restrictive ordinances.	**Yes.** The project would have no impacts on known valuable mineral resources or locally important mineral resource recovery sites. Therefore, the project would comply with Chapter 29 of the Solano County Code.
Chapter 31, Grading, Drainage, Land Leveling, and Erosion Control. Adopts the Uniform Building Code and establishes procedures, design principles, and implementation for grading, erosion, and sediment control.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with Chapter 31 of the Solano County Code.
Vacaville General Plan (2015), Chapter Two, Land Use Element	
Goal LU-1: Preserve, promote, and protect the existing character and quality of life within Vacaville.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with the relevant goal and policy in Chapter Two of the Vacaville General Plan.
Policy LU-P1.2: Protect Vacaville's natural environment. Integrate creeks, hills, utility corridors, and other significant natural features into major development plans.	
Vacaville General Plan (2015), Chapter Four, Conservation and Open Space Element	
Goal COS-2: Preserve and restore Vacaville's creeks.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with the relevant goal, policies, and action in Chapter Four of the Vacaville General Plan.
Policy COS-P2.2: Protect existing stream channels and riparian vegetation by requiring buffering or landscaped setbacks and storm runoff interception.	
Policy COS-P2.3: Require creekway and riparian area protection during construction, such as providing adequate setbacks from the creek	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
bank and riparian areas, and creekway and riparian area restoration after construction.	
Policy COS-P2.4: Implement the City's Creekways Policy in all new development approvals to balance recreation and conservation within creekway areas. Integrate creeks with trails and other recreational open space, and encourage public access along creek corridors where compatible with protection of the creek's natural resources and flood control functions.	
Action COS-A2.1: Develop a creek protection ordinance requiring development setbacks from creeks and protection of the creeks and associated riparian habitats during construction, and restoration after construction. As part of this ordinance, implement programs to limit invasive non-native species from becoming established or expanding within the city, and evaluate public access along creekways to ensure protection of habitat resources and to ensure public safety within creek setback areas. Update the City's Creekways Policy to be consistent with the creek protection ordinance.	
Goal COS-6: Protect and enhance cultural resources for their aesthetic, scientific, educational, and cultural values.	**Yes.** Compliance with COCs **PAL-1** through **PAL-8** would ensure the proposed project complies with the relevant goal and policies in Chapter Four of the Vacaville General Plan.
Policy COS-P6.4: Require that if cultural resources, including archaeological or paleontological resources, are uncovered during grading or other on-site excavation activities, construction shall stop until appropriate mitigation is implemented.	
Policy COS-P6.5: Require that any archaeological or paleontological resources on a development project site be either preserved in their sites or adequately documented as a condition of removal. When a development project has sufficient flexibility, avoidance and preservation of the resource shall be the primary mitigation measure, unless the City identifies superior mitigation. If resources are documented, coordinate with descendants and/or stakeholder groups, as warranted.	
Goal COS-13: Promote water conservation as an important part of a long-term and sustainable water supply.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with the relevant goals, policies, and actions in Chapter Four of the Vacaville General Plan
Policy COS-P13.1: Encourage and support water conservation programs.	
Policy COS-P13.3: Prohibit development that would adversely affect the City's well field.	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Policy COS-P13.4: Require new development to incorporate Best Management Practices (BMPs) for water use and efficiency and demonstrate specific water conservation measures.	
Policy COS-P13.5: Coordinate water conservation and quality programs with the Solano County Water Agency and other appropriate water agencies.	
Policy COS-P13.6: Whenever possible, use recycled or non-potable water for irrigation in landscaped areas.	
Action COS-A13.2: Continue to implement the City's water-efficient-landscape requirements, which address the use of drought-tolerant plant materials and irrigation standards.	
Action COS-A13.3: Continue to pursue the development of infrastructure for distribution of recycled or non-potable water for irrigation. Maintain and implement the Recycled Water Master Plan to use recycled water as an alternative source of water for agricultural irrigation, urban irrigation, industrial reuse, and other beneficial uses.	
Goal COS-14: Protect the quality and supply of surface water and groundwater resources.	
Policy COS-P14.1: Protect the Alamo, Encinosa, Gibson, and Ulatis Creek watersheds by minimizing point and nonpoint source pollutants.	
Policy COS-P14.2: Integrate City planning and programs with other watershed planning efforts, including Best Management Practices (BMPs), guidelines, and policies of both the Sacramento and San Francisco Bay Regional Water Quality Control Boards.	
Policy COS-P14.5: Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from construction or from new impervious surfaces.	
Policy COS-P14.7: Protect groundwater recharge and groundwater quality when considering new development projects.	
Action COS-A14.2: Work with the Solano County Water Agency (SCWA) to identify ways for the City of Vacaville to coordinate with SCWA when planning activities and projects that may impact natural water sources that supply water to Vacaville.	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Goal COS-16: Consider the location of mineral resources in the development review process.	**Yes.** The project would have no impacts on known valuable mineral resources or locally important mineral resource recovery sites. Therefore, the project would comply with the relevant goal and policy in Chapter Four of the Vacaville General Plan.
Policy COS-P16.1: When reviewing land use proposals, take into account potentially available mineral resources on the property or in the vicinity of the project site.	
Vacaville General Plan (2015), Chapter Six, Public Facilities and Service Element	
Goal PUB-13: Collect, transmit, treat, and dispose of wastewater in ways that are safe, sanitary, and environmentally acceptable.	**Yes.** The project would rely on chemical toilets during project construction and operation. Sanitary wastewater generated from project construction and operation would have less than significant impacts on soils and comply with the relevant goals and policies in Chapter Six of the Vacaville General Plan.
Policy PUB-P13.1: Maintain wastewater conveyance, treatment, and disposal infrastructure in good working condition in order to supply municipal sewer service to the city's residents and businesses.	
Goal PUB-14: Coordinate wastewater conveyance, treatment, and disposal with land use planning.	
Policy PUB-P14.1: Assess the adequacy of wastewater infrastructure in existing developed areas, and program any needed improvements in coordination with new infrastructure that will serve developing areas.	
Policy PUB-P14.3: Ensure that new development provides adequate funding for all wastewater infrastructure and facilities.	
Policy PUB-P14.4: Prohibit any development that will not maintain adequate standards for wastewater service. All wastewater service standards shall be met prior to project occupancy.	
Policy PUB-P14.5: Require that new development designate sewer easements or routes when tentative maps or specific plans are approved.	
Goal PUB-15: Pursue innovative solutions for wastewater treatment and disposal or reuse that are compatible with the environment.	
Policy PUB-P15.1: Require buffer landscaping and multiple use, where feasible, of wastewater utility sites and rights-of-way to harmonize with adjoining uses.	
Policy PUB-P15.2: Seek out cost effective and environmentally sustainable methods of distributing and using recycled water for non-potable uses.	
Vacaville General Plan (2015), Chapter Seven, Safety Element	
Goal SAF-1: Minimize exposure to geologic hazards, including slope instability, subsidence, and expansive soils, and to seismic hazards,	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
including ground shaking, fault rupture, liquefaction, and landslides.	complies with the relevant goals, policies, and actions in Chapter Seven of the Vacaville General Plan.
Policy SAF-P1.1: Consider geologic conditions when designating land use and designing development in Vacaville. Where potential geologic or seismic risks are high and unmitigable, retain low-occupancy or open space forms of use.	
Policy SAF-P1.4: Determine the geologic suitability of proposed development sites during the earliest stages of the planning process. Such analyses should consider the potential structural engineering needs of the project and the impacts development activities may have on adjacent lands.	
Policy SAF-P1.6: Require preparation of a soils report prior to issuing a building permit, except where the Building Official determines that a report is not needed.	
Policy SAF-P1.7: Require comprehensive geologic and engineering studies of new critical structures, such as hospitals, fire and police stations, utility centers and substations, emergency communications facilities, overpasses, and bridges, regardless of location.	
Policy SAF-P1.8: To the extent practical, do not allow facilities and structures that are public, high-occupancy, or critical in disaster situations (e.g., hospitals, fire and police stations, and bridges) to be sited in areas highly susceptible to damage resulting from earthquakes. If locating such a facility or structure in a high-risk area is deemed essential to the public welfare, require that they be sited, designed, and constructed with consideration of the potential for damage.	
Policy SAF-P1.9: Limit cut slopes to 2:1 (50 percent slope) except where an engineering geologist can establish that a steeper slope would perform satisfactorily over the long term. Where practicable, require more gentle slopes than the 2:1 standard. Encourage use of retaining walls, rock-filled crib walls, or stepped-in buildings as alternatives to high cut slopes.	
Policy SAF-P1.10: Require contour rounding and revegetation to preserve natural qualities of sloping terrains, mitigate the artificial appearance of engineered slopes, and control erosion. Encourage the use of native trees and shrubbery in revegetation areas.	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Goal SAF-2: Collect, convey, store, and dispose of stormwater in ways that provide an appropriate level of protection against flooding, account for existing and future development, and address applicable environmental concerns.	
Policy SAF-P2.2: Assess the adequacy of storm drainage utilities in existing developed areas, and program any needed improvements in coordination with new infrastructure that will serve developing areas.	
Policy SAF-P2.5: Maintain open areas needed to retain stormwater and prevent flooding of urban or agricultural land.	
Goal SAF-3: Provide effective storm drainage facilities for development projects.	
Policy SAF-P3.1: Evaluate the storm drainage needs for each project; this evaluation should account for projected runoff volumes and flow rates once the drainage area is fully developed. In the Alamo Creek watershed upstream of Peabody Road (including Alamo, Laguna, and Encinosa Creeks), require post-development 10-year and 100-year peak flows to be reduced to 90 percent of predevelopment levels. In the remainder of Vacaville, for development involving new connections to creeks, peak flows shall not exceed predevelopment levels for 10- and 100-year storm events.	
Policy SAF-P3.3: Require a storm drainage site-specific plan or storm drainage technical memorandum and calculations to be prepared for new development projects to ensure new development adequately provides for on-site drainage facilities necessary to protect the new development from potential flood hazards, and ensure that potential off-site impacts are fully mitigated.	
Policy SAF-P3.4: Require that new development designate storm drainage easements or routes when tentative maps or specific plans are approved.	
Action SAF-A3.1: Maintain the City's Storm Drainage Master Plan, which ensures that new development adequately provides for on-site and downstream off-site mitigation of potential flood hazards and drainage problems.	
Goal SAF-7: Reduce risk to life and property associated with emergencies and natural and human-made disasters.	

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Policy SAF-P7.1: Promote public awareness of potential disaster scenarios for Vacaville and encourage community preparedness.	
Policy SAF-P7.13: Incorporate the current Solano County Multi-Jurisdictional Hazard Mitigation Plan and all relevant annexes, as approved by the Federal Emergency Management Agency, into this Safety Element by reference as permitted by California Government Code Section 65302.6.	
Goal SAF-8: Improve Vacaville's ability to adapt and respond to the impacts of climate change.	
Policy SAF-P8.7: Encourage new developments and existing property owners to incorporate water and energy efficiency and conservation features, renewable energy, and energy storage on-site to reduce energy and water demands and improve on-site resilience. Support financing efforts to increase community access to these features.	
Policy SAF-P8.9: Use natural resources and infrastructure to absorb the impacts of climate-related hazards and associated natural hazards, as feasible.	
Policy SAF-P8.10: Coordinate with the Solano County Water Agency, Solano Irrigation District, and Solano Collaborative to prepare for a reduced, long-term water supply resulting from more frequent and severe drought event and implement extensive water conservation measures to ensure sustainable water supply.	
Vacaville Municipal Code (2025)	
Chapter 13.08, Sewage Standards. Establishes ordinances for sewage systems for new construction, including on-site sewage disposal.	**Yes.** The project would rely on chemical toilets during project construction and operation. Septic wastewater generated from project construction and operation would have less than significant impacts on soils and comply with ordinances in Chapter 13.08 of the Vacaville Municipal Code.
Title 14, the Land Use and Development Code. Establishes ordinances for the protection of geologic, mineral, and paleontological resources for projects in which the City of Vacaville is acting as the lead agency.	**Yes.** The CEC would be the lead agency for the project responsible for protecting geologic, mineral, and paleontological resources. Compliance with COCs **PAL-1** through **PAL-8** would ensure potential impacts on paleontological resources would be less than significant, consistent with ordinances in the Vacaville Municipal Code, Title 14, for projects in which Vacaville is the lead agency. The project would have no impacts on unique geologic features, known valuable mineral resources, or locally important mineral resource recovery sites.

TABLE 5.6-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Chapter 14.09, Grading, Erosion, and Sediment Control Ordinance. Adopts the Uniform Building Code and establishes procedures, design standards, and implementation and enforcement methods for grading, sediment and erosion control, and stormwater management to comply with applicable federal and state LORS.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with Chapter 14.09 of the Vacaville Municipal Code.
Chapter 14.26, Urban Storm Water Quality, Management and Discharge Control Ordinance. Establishes procedures for stormwater quality management to comply with applicable federal and state LORS.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with Chapter 14.26 of the Vacaville Municipal Code.
Chapter 15.20.252. Largely adopts the 2022 CBC, with amendments, and establishes ordinances for new construction to mitigate impacts related to geologic hazards.	**Yes.** Compliance with COCs **GEO-1, GEN-1, CIVIL-1, STRUC-1**, and **WATER-1** through **WATER-3** would ensure the proposed project complies with Chapter 15.20.252 of the Vacaville Municipal Code.
Standards	
Society for Vertebrate Paleontology (2010)	
The **Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Non-Renewable Paleontological Resources** is a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources developed by the Society for Vertebrate Paleontology (SVP), a national organization of professional scientists. The measures were adopted in October 1995, and revised in 2010 following adoption of the Paleontological Resources Preservation Act of 2009. The SVP impact mitigation guidelines establish criteria for identifying and assessing significant paleontological resources. Additionally, these guidelines include standards and procedures to be employed prior to site disturbance, monitoring during disturbance, and preservation/mitigation of identified resources.	**Yes.** Compliance with the following COCs shall ensure the project complies with SVP standards. COCs **PAL-1** through **PAL-8** were developed based upon the guidance provided by the SVP to ensure that, if present, paleontological resources would be properly identified and appropriate protection or salvage measures implemented to mitigate the loss of these resources due to construction. COCs **PAL-1** through **PAL-8** require identification of a qualified Paleontological Resource Specialist, identification of qualified Paleontological Resource Monitors, training of site workers, periodic reporting, and collection, documentation and archival of any significant paleontological resources identified.

5.6.4 Conclusions and Recommendations

CEC staff recommends adopting COCs **GEO-1** and **PAL-1** through **PAL-8**, which are described below in Section 5.6.5. The proposed COCs are enforceable as part of the CEC's Opt-In Certification for the project.

Implementation of COC **GEO-1**, Facility Design COCs **GEN-1, CIVIL-1**, and **STRUC-1** (**Section 4.1, Facility Design**), **Water Resources** COCs **WATER-1** through **WATER-3** (**Section 5.16, Water Resources**), and compliance with the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS, would mitigate

potential impacts related to construction and operation of jurisdictional project components and geologic hazards to less than significant. These COCs would ensure that the jurisdictional project components are designed, graded, constructed, and operated to have less than significant impacts on, and from, geologic hazards.

Implementation of COCs **PAL-1** through **PAL-8** would mitigate potential impacts from grading, excavation, and construction of the jurisdictional project components on paleontological resources to less than significant.

Through compliance with CEC staff's recommended **MMs GEO-1** and **PAL-1** through **PAL-8**, the CBC, Solano County Code, Vacaville Municipal Code, and all other applicable LORS, potential impacts related to geologic hazards and paleontological resources from construction and operation of the non-jurisdictional project components would be mitigated to less than significant.

As discussed above, with mitigation incorporated, project construction and operation would have less than significant impacts from, and on, geologic hazards, and on paleontological resources, mineral resources, or geologic resources of commercial, recreational, and scientific value. Construction and operation of the jurisdictional project components would conform with applicable LORS.

5.6.5 Proposed Conditions of Certification

For purposes of these COCs, references to the California Building Code means the code in force at the time the project starts ground disturbing activities.

GEO-1 In accordance with CBC, Section 1803, the project owner shall perform final geotechnical and geohazard investigations. The results shall be documented in a final geotechnical and geohazard report. The geotechnical investigations shall evaluate applicable investigative conditions, including, but are not limited to, questionable soils, expansive soils, and shallow groundwater. The geotechnical investigations shall be performed consistent with the project's Seismic Design Category. For structures assigned to Seismic Design Categories C through F, geotechnical investigations shall evaluate the potential for slope instability, liquefaction, total and differential settlement, and surface displacement due to faulting or seismically induced lateral spreading or lateral flow. For structures assigned to Seismic Design Categories D through F, additional evaluations shall be performed as applicable.

The geohazard investigations shall evaluate conditions that may require mitigation, including site geology, the presence of local and regional faults that are Holocene-active or potentially active, and anticipated ground-motion parameters.

The final geotechnical and geohazard report shall recommend final project design criteria to mitigate any potential impacts related to geologic and seismic

hazards to less than significant levels. In accordance with CBC Section 1803, the final geotechnical and geohazard report shall be prepared and signed by California licensed, and appropriately qualified, design professionals. The project owner shall incorporate recommendations for project design criteria into the final project design, grading, and construction.

Verification: The project owner shall provide to the CPM copies of the final geotechnical and geohazards report and any comments by the DCBO at least 60 days prior to the commencement of ground disturbing activities.

PAL-1 The project owner shall retain a qualified paleontological resource specialist (PRS). The project owner shall provide the CPM with the resume, qualifications, and contact information of its PRS for review and approval. The PRS's resume shall demonstrate to the satisfaction of the CPM the appropriate education and experience to accomplish the required paleontological resource tasks. The PRS's resume shall also include the names and phone numbers of references that can be contacted to verify information.

As determined by the CPM, the PRS shall meet the minimum qualifications for a Qualified Professional Paleontologist in the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The qualifications of the PRS shall include the following:

- A graduate degree in paleontology or geology, and/or a publication record in peer reviewed journals; and demonstrated competence in field techniques, preparation, identification, curation, and reporting in the state or geologic province in which the project occurs. An advanced degree is less important than demonstrated competence and regional experience.
- At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.
- Proficiency in recognizing fossils in the field and determining their significance.
- Expertise in local geology, stratigraphy, and biostratigraphy.
- Experience collecting vertebrate fossils in the field.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors (PRMs) to monitor activities with potential to impact paleontological resources as the PRS deems necessary on the project. PRMs shall have the equivalent of the following qualifications:

- B.S. or B.A. degree in geology or paleontology and a minimum of one year of relevant paleontological resource monitoring experience in California; or

- A.S. or A.A. in geology, paleontology, or biology and a minimum of four years of relevant paleontological resource monitoring experience in California; or
- Enrollment in upper division classes pursuing a bachelor's degree or a more advanced degree in the field of geology or paleontology and a minimum of three years of relevant paleontological resource monitoring experience in California; and
- Demonstrated proficiency in recognizing various types of fossils, in collection methods, and in other paleontological field techniques.

If the approved PRS is replaced prior to completion of project mitigation and submittal of the paleontological resources report (PRR), the project owner shall obtain CPM approval for the replacement PRS. The project owner shall keep resumes on file for the qualified PRSs and PRMs.

The PRM's resume shall include the names and contact information of references. If a PRM is replaced, the resume of the replacement PRM shall also be provided to the CPM for review and approval.

Verification: At least 60 days prior to the start of ground disturbance, the project owner shall submit a resume and statement of availability of its designated PRS for on-site work to the CPM for review and approval. CPM approval is required prior to the initiation of ground disturbing activities.

At least 30 days prior to ground disturbance, the PRS or project owner shall provide a letter with resumes naming anticipated PRMs for the project. The letter shall state that the identified PRMs meet the minimum qualifications for paleontological resource monitoring as required by this condition of certification. If additional PRMs are needed during the project, the PRS shall provide additional letters and resumes to the CPM. The letter shall be provided to the CPM for approval no later than one week prior to the monitor's beginning on-site duties.

Prior to any change of the PRS, the project owner shall submit the resume of the proposed new PRS to the CPM for review and approval.

PAL-2 The project owner shall provide the PRS and the CPM, for review and approval, maps and drawings showing the project footprint, including construction laydown areas and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS and CPM. The site grading plan and the plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings must show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet (1:480) and 1 inch = 100 feet (1:1,200). If the footprint of the

project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS and CPM.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS and CPM. Before work commences on affected phases, the Project owner shall notify the PRS and CPM of any construction scheduling changes for that phase.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent and construction field manager to confirm area(s) to be worked the following week, until ground disturbance is completed.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall provide maps and drawings to the PRS and CPM for review and approval.

If there are planned changes to the footprint of the project, revised maps and drawings shall be provided to the PRS and CPM at least 15 days prior to the start of ground disturbance.

If there are changes to the scheduling of the construction phases, the project owner shall submit a letter to the CPM within five days of identifying the changes.

PAL-3 The project owner shall ensure that the PRS prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP) and submits it to the CPM for review and approval. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall function as the formal guide for monitoring, collecting, sampling, and reporting activities, and may be modified with CPM approval. The PRMMP shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall include all updates and reside with the PRS, each PRM, the project's on-site manager, and the CPM.

The PRMMP shall be developed in accordance with the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The PRMMP shall include, but not be limited to, the following:

- Procedures for, and assurance, that those procedures would be followed in the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, field work, flagging or staking, construction monitoring, mapping and data recovery,

fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation.

- Identification of the person(s) expected to assist with each of the tasks required by the PRMMP and these COCs.
- A thorough discussion of the geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units.
- An explanation of why sampling is needed, a description of the sampling methodology, and how much sampling is expected to take place and in which geologic units. This shall include descriptions of the sampling procedures that shall be used for fine-grained and coarse-grained units.
- A discussion of the locations where monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling at these locations.
- A discussion of procedures to be followed: (a) in the event of a significant fossil discovery, (b) stopping construction, (c) resuming construction, and how notifications shall be performed.
- A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits.
- Procedures to inventory, prepare, and deliver fossil materials for curation in a retrievable storage collection at a public repository or museum that meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources.
- Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation and how they shall be met, and the name and phone number of the contact person at the institution.
- A copy of the paleontological resources COCs.
- A copy of the daily monitoring log form.

Verification: At least 30 days prior to ground disturbance, the project owner shall provide a copy of the PRMMP to the CPM for review and approval. Approval of the PRMMP by the CPM shall occur prior to any ground disturbance. The PRMMP shall include an affidavit of authorship by the PRS and acceptance of the PRMMP by the project owner evidenced by a signature.

PAL-4 Prior to ground disturbance the project owner and the PRS shall prepare a CPM-approved Worker Environmental Awareness Program (WEAP).

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect them. The purpose of the WEAP is to train project workers to recognize paleontological resources and identify procedures they must follow to ensure there are no impacts to sensitive paleontological resources.

The WEAP shall include:

- A discussion of applicable laws and penalties under the law.
- Good quality photographs or physical examples of fossils expected to be found in units of high paleontological potential at, or near, the project site.
- Information that the PRS and PRM have the authority to stop or redirect construction in the event of a discovery or unanticipated impact on a paleontological resource.
- Instruction that employees are to stop or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM.
- An informational brochure that identifies reporting procedures in the event of a discovery.
- A WEAP certification of completion form signed by each worker indicating that they have received the training.
- A sticker that shall be placed on hard hats indicating that environmental training has been completed.

The project owner shall submit the training script and, if the project owner is planning to use a video for training, a copy of the training video, with reporting procedures that workers will follow.

Verification: At least 30 days prior to ground disturbance, the project owner shall submit the draft WEAP, including the brochure and sticker, to the CPM for review and comments. The submittal shall also include a draft training script and the set of reporting procedures for workers to follow.

At least 15 days prior to ground disturbance, the project owner shall submit to the CPM for approval the final WEAP and training script. If the project owner is planning to use a video for training, a copy of the training video shall be submitted following final approval of the WEAP and training script.

PAL-5 No worker shall excavate or perform any ground disturbing activity prior to receiving CPM-approved WEAP training by the PRS, unless specifically approved by the CPM.

Prior to project ground disturbance, the following workers shall be WEAP trained by the PRS in-person: project managers, construction supervisors, foremen, and all general workers involved with or who operate ground-disturbing equipment or tools. Following the start of ground disturbing activities and after the initial WEAP training conducted prior to ground disturbance, a CPM- approved video or in-person training may be used for new employees. If a video is used, a qualified trainer shall be present to monitor training and respond to questions.

The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. A WEAP certification of completion form shall be used to document who has received the required training.

Verification: In the Monthly Compliance Report (MCR), the project owner shall include copies of the WEAP certification of completion forms with the names of those trained, trainer identification, and type of training (in-person and/or video) offered that month. The MCR shall also include a running total of all persons who have completed the training to date.

The resume and qualifications of the trainer shall be submitted to the CPM for review and approval prior to providing WEAP training.

If the project owner requests an alternate paleontological WEAP trainer, the resume and qualifications of the alternate trainer shall be submitted to the CPM for review and approval prior to installation of an alternate trainer. Alternate trainers shall not conduct WEAP training prior to CPM authorization.

PAL-6 The project owner shall ensure that the PRS and PRM(s) monitor, consistent with the PRMMP, all construction-related grading and excavation in areas where potential fossil-bearing materials were identified, including at the project site and along any linear facilities. If the PRS determines that full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, the project owner shall notify and seek the concurrence of the CPM.

The project owner shall ensure that the PRS and PRM(s) have the authority to stop or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted per the following requirements.

Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS and the project owner to the CPM prior to the change in monitoring and be included in the MCR. The letter or email shall include the justification for the change in monitoring and be submitted to the CPM for review and approval.

The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities; copies of these logs shall be submitted with the MCR. The name and contact information of the PRS and PRM(s) who were making field observations shall be included in the daily log. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the CPM at any time.

The project owner shall ensure that the PRS notifies the CPM within 24 hours of the occurrence of any incidents of non-compliance with any paleontological resources COCs. The PRS shall recommend corrective action to resolve the issues or achieve compliance with the COCs.

For any significant paleontological resources encountered, either the project owner or the PRS shall notify the CPM within 24 hours. If the resources are encountered on a weekend or holiday, notification shall occur on the morning of the next business day. In the event construction has been stopped because of a paleontological find, such notification shall be provided as soon as practical, but not later than 24 hours after a stop work order has been issued.

For excavations planned in material that is classified as having a moderate to high paleontological potential prior to construction additional precautions may be required. Should excavation methods be proposed that would preclude effective monitoring and examination of paleontological resources encountered during excavation, appropriate mitigation involving education of the public about the lost resources shall be proposed in the PRMMP.

The project owner shall ensure that the PRS prepares a summary of monitoring and other paleontological activities to be included in each MCR. The summary shall include the name(s) of the PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities, and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils.

Negative findings, when no fossils are identified, shall also be reported. A final section of the report shall address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the CPM-approved monitoring plan. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

Verification: A copy of the daily monitoring log of paleontological resource activities shall be included in the MCR.

The project owner shall ensure that the PRS submits the summary of monitoring and paleontological activities in the MCR. When feasible, the CPM shall be notified 15 days in advance of any proposed changes in monitoring identified in the PRMMP, which require concurrence between the PRS and CPM. If there is any unforeseen change in monitoring, the notice shall be given as soon as possible prior to implementation of the change.

PAL-7 The project owner shall ensure preparation of a paleontological resources report (PRR) by the designated PRS. The PRR shall be prepared following the completion of ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and shall be submitted to the CPM for approval.

The report shall include, but not be limited to, a description and inventory of recovered fossil materials, a map showing the location of the paleontological resources encountered and the PRS's description of sensitivity and significance of those resources, and notes regarding if and how the fossil material was curated in accordance with **PAL-3**.

Any portions of this report that involve any independent judgment or analysis of the earth's crust, and the rocks and other materials which compose it, must be done by or under the responsible charge of a California licensed Professional Geologist.

Verification: Within 90 days after completion of ground-disturbing activities, including landscaping, the project owner shall submit the PRR under confidential cover to the CPM for review and approval.

PAL-8 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed, including collection of fossil materials, preparation of fossil materials for analysis, analysis of fossils, identification and inventory of fossils, preparation of fossils for curation, and delivery for curation of all significant paleontological materials encountered and collected during project construction. The project owner shall pay all curation fees charged by the museum for fossil materials collected and curated for paleontological mitigation. The project owner shall also provide the curator with documentation showing the project owner irrevocably and unconditionally donates, gives, and assigns permanent, absolute, and unconditional ownership of the fossil material.

Verification: Within 60 days after the submittal of the PRR, the project owner shall submit documentation to the CPM identifying the entity that would be responsible for curating collected specimens. This documentation shall also show that fees were paid for curation and the owner relinquished control and ownership of all fossil material.

5.6.6 Recommended Mitigation Measures

During construction of non-jurisdictional project components, the following mitigation measures are recommended to be adopted by the agency with permitting authority over those components, which can and should adopt them, consistent with California Code of Regulations title 14, section 15091(a)(2): **MM GEO-1** and **MM PAL-1** through **MM PAL-8**.

MM GEO-1 In accordance with CBC, Section 1803, the project owner shall perform final geotechnical and geohazard investigations. The results shall be documented in a final geotechnical and geohazard report. The geotechnical investigations shall evaluate applicable investigative conditions, including, but are not limited to, questionable soils, expansive soils, and shallow groundwater. The geotechnical investigations shall be performed consistent with the project's Seismic Design Category. For structures assigned to Seismic Design Categories C through F, geotechnical investigations shall evaluate the potential for slope instability, liquefaction, total and differential settlement, and surface displacement due to faulting or seismically induced lateral spreading or lateral flow. For structures assigned to Seismic Design Categories D through F, additional evaluations shall be performed as applicable.

The geohazard investigations shall evaluate conditions that may require mitigation, including site geology, the presence of local and regional faults that are Holocene-active or potentially active, and anticipated ground-motion parameters.

The final geotechnical and geohazard report shall recommend final project design criteria to mitigate any potential impacts related to geologic and seismic hazards to less than significant levels. In accordance with CBC Section 1803, the final geotechnical and geohazard report shall be prepared and signed by California licensed, and appropriately qualified, design professionals. The project owner shall incorporate recommendations for project design criteria into the final project design, grading, and construction.

MM PAL-1 The project owner shall retain a qualified paleontological resource specialist (PRS). The PRS's resume shall demonstrate appropriate education and experience to accomplish the required paleontological resource tasks. The PRS's resume shall also include the names and phone numbers of references that can be contacted to verify information.

The PRS shall meet the minimum qualifications for a Qualified Professional Paleontologist as defined in the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The qualifications of the PRS shall include the following:

- A graduate degree in paleontology or geology, and/or a publication record in peer reviewed journals; and demonstrated competence in field techniques, preparation, identification, curation, and reporting in the state or geologic province in which the project occurs. An advanced degree is less important than demonstrated competence and regional experience.
- At least three years of paleontological resource mitigation and field experience in California and at least one year of experience leading paleontological resource mitigation and field activities.
- Proficiency in recognizing fossils in the field and determining their significance.
- Expertise in local geology, stratigraphy, and biostratigraphy.
- Experience collecting vertebrate fossils in the field.

The project owner shall ensure that the PRS obtains qualified paleontological resource monitors (PRMs) to monitor activities with potential to impact paleontological resources as the PRS deems necessary on the project. PRMs shall have the equivalent of the following qualifications:

- B.S. or B.A. degree in geology or paleontology and a minimum of one year of relevant paleontological resource monitoring experience in California; or
- A.S. or A.A. in geology, paleontology, or biology and a minimum of four years of relevant paleontological resource monitoring experience in California; or
- Enrollment in upper division classes pursuing a bachelor's degree or a more advanced degree in the field of geology or paleontology and a minimum of three years of relevant paleontological resource monitoring experience in California; and
- Demonstrated proficiency in recognizing various types of fossils, in collection methods, and in other paleontological field techniques.

If the approved PRS is replaced prior to completion of project mitigation and submittal of the paleontological resources report (PRR), the project owner shall obtain a replacement PRS. The project owner shall keep resumes on file for the qualified PRSs and PRMs.

The PRM's resume shall include the names and contact information of references.

MM PAL-2 The project owner shall provide the PRS, for review and approval, maps and drawings showing the project footprint, including construction laydown areas and all related facilities. Maps shall identify all areas of the project where ground disturbance is anticipated. If the PRS requests enlargements or strip maps for linear facility routes, the project owner shall provide copies to the PRS. The site

grading plan and the plan and profile drawings for the utility lines would be acceptable for this purpose. The plan drawings must show the location, depth, and extent of all ground disturbances and be at a scale between 1 inch = 40 feet (1:480) and 1 inch = 100 feet (1:1,200). If the footprint of the project or its linear facilities change, the project owner shall provide maps and drawings reflecting those changes to the PRS.

If construction of the project proceeds in phases, maps and drawings may be submitted prior to the start of each phase. A letter identifying the proposed schedule of each project phase shall be provided to the PRS. Before work commences on affected phases, the project owner shall notify the PRS of any construction scheduling changes for that phase.

At a minimum, the project owner shall ensure that the PRS or PRM consults weekly with the project superintendent and construction field manager to confirm area(s) to be worked the following week, until ground disturbance is completed.

MM PAL-3 The project owner shall ensure that the PRS prepares a Paleontological Resources Monitoring and Mitigation Plan (PRMMP). The PRMMP shall function as the formal guide for monitoring, collecting, sampling, and reporting activities. The PRMMP shall be used as the basis of discussion when on-site decisions or changes are proposed. Copies of the PRMMP shall include all updates and reside with the PRS, each PRM, and the project's on-site manager.

The PRMMP shall be developed in accordance with the Society of Vertebrate Paleontology's Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources (SVP 2010). The PRMMP shall include, but not be limited to, the following:

- Procedures for, and assurance, that those procedures would be followed in the performance and sequence of project-related tasks, such as any literature searches, pre-construction surveys, worker environmental training, field work, flagging or staking, construction monitoring, mapping and data recovery, fossil preparation and collection, identification and inventory, preparation of final reports, and transmittal of materials for curation.
- Identification of the person(s) expected to assist with each of the tasks required by the PRMMP and these MMs.
- A thorough discussion of the geologic units expected to be encountered, the location and depth of the units relative to the project when known, and the known sensitivity of those units based on the occurrence of fossils either in that unit or in correlative units.
- An explanation of why sampling is needed, a description of the sampling methodology, and how much sampling is expected to take place and in which

geologic units. This shall include descriptions of the sampling procedures that shall be used for fine-grained and coarse-grained units.

- A discussion of the locations where monitoring of project construction activities is deemed necessary, and a proposed plan for monitoring and sampling at these locations.
- A discussion of procedures to be followed: (a) in the event of a significant fossil discovery, (b) stopping construction, (c) resuming construction, and how notifications shall be performed.
- A discussion of equipment and supplies necessary for collection of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits.
- Procedures to inventory, prepare, and deliver fossil materials for curation in a retrievable storage collection at a public repository or museum that meet the Society of Vertebrate Paleontology's standards and requirements for the curation of paleontological resources.
- Identification of the institution that has agreed to receive data and fossil materials collected, requirements or specifications for materials delivered for curation and how they shall be met, and the name and phone number of the contact person at the institution.
- A copy of the paleontological resources MMs.
- A copy of the daily monitoring log form.

MM PAL-4 Prior to ground disturbance the project owner and the PRS shall prepare a Worker Environmental Awareness Program (WEAP).

The WEAP shall address the possibility of encountering paleontological resources in the field, the sensitivity and importance of these resources, and legal obligations to preserve and protect them. The purpose of the WEAP is to train project workers to recognize paleontological resources and identify procedures they must follow to ensure there are no impacts to sensitive paleontological resources.

The WEAP shall include:

- A discussion of applicable laws and penalties under the law.
- Good quality photographs or physical examples of fossils expected to be found in units of high paleontologic potential at, or near, the project site.
- Information that the PRS and PRM have the authority to stop or redirect construction in the event of a discovery or unanticipated impact on a paleontological resource.

- Instruction that employees are to stop or redirect work in the vicinity of a find and to contact their supervisor and the PRS or PRM.
- An informational brochure that identifies reporting procedures in the event of a discovery.
- A WEAP certification of completion form signed by each worker indicating that they have received the training.
- A sticker that shall be placed on hard hats indicating that environmental training has been completed.

The project owner shall prepare and retain the training script and, if the project owner is planning to use a video for training, a copy of the training video, with the set of reporting procedures for workers to follow that shall be used to present the WEAP and qualify workers to conduct ground disturbing activities that could impact paleontological resources.

MM PAL-5 No worker shall excavate or perform any ground disturbing activity prior to receiving WEAP training by the PRS.

Prior to project ground disturbance, the following workers shall be WEAP trained by the PRS in-person: project managers, construction supervisors, foremen, and all general workers involved with or who operate ground-disturbing equipment or tools. Following the start of ground disturbing activities and after the initial WEAP training conducted prior to ground disturbance, a video or in-person training may be used for new employees. If a video is used, a qualified trainer shall be present to monitor training and respond to questions.

The training program may be combined with other training programs prepared for cultural and biological resources, hazardous materials, or other areas of interest or concern. A WEAP certification of completion form shall be used to document who has received the required training.

MM PAL-6 The project owner shall ensure that the PRS and PRM(s) monitor, consistent with the PRMMP, all construction-related grading and excavation in areas where potential fossil-bearing materials were identified, including at the project site and along any linear facilities. If the PRS determines that full-time monitoring is not necessary in locations that were identified as potentially fossil bearing in the PRMMP, PRS may notify the project owner.

The project owner shall ensure that the PRS and PRM(s) have the authority to stop or redirect construction if paleontological resources are encountered. The project owner shall ensure that there is no interference with monitoring activities unless directed by the PRS. Monitoring activities shall be conducted per the following requirements.

Any change of monitoring from the accepted schedule in the PRMMP shall be proposed in a letter or email from the PRS to the project owner prior to the change in monitoring. The letter or email shall include the justification for the change in monitoring.

The project owner shall ensure that the PRM(s) keep a daily monitoring log of paleontological resource activities. The name and contact information of the PRS and PRM(s) who were making field observations shall be included in the daily log. The PRS may informally discuss paleontological resource monitoring and mitigation activities with the project owner at any time.

For any significant paleontological resources encountered, the PRS shall notify the project owner within 24 hours. If the resources are encountered on a weekend or holiday, notification shall occur on the morning of the next business day. In the event construction has been stopped because of a paleontological find, such notification shall be provided as soon as practical, but not later than 24 hours after a stop work order has been issued.

For excavations planned in material that is classified as having a moderate to high paleontological potential prior to construction additional precautions may be required. Should excavation methods be proposed that would preclude effective monitoring and examination of paleontological resources encountered during excavation, appropriate mitigation involving education of the public about the lost resources shall be proposed in the PRMMP.

The project owner shall ensure that the PRS prepares a monthly summary of monitoring and other paleontological activities. The summary shall include the name(s) of the PRS or PRM(s) active during the month, general descriptions of training and monitored construction activities, and general locations of excavations, grading, and other activities. A section of the report shall include the geologic units or subunits encountered, descriptions of samplings within each unit, and a list of identified fossils.

Negative findings, when no fossils are identified, shall also be reported in the report. A final section of the report shall address any issues or concerns about the project relating to paleontologic monitoring, including any incidents of non-compliance or any changes to the PRMMP. If no monitoring took place during the month, the report shall include an explanation in the summary as to why monitoring was not conducted.

MM PAL-7 The project owner shall ensure preparation of a paleontological resources report (PRR) by the designated PRS. The PRR shall be prepared following the completion of ground-disturbing activities. The PRR shall include an analysis of the collected fossil materials and related information and shall be submitted to the project owner.

The report shall include, but not be limited to, a description and inventory of recovered fossil materials, a map showing the location of paleontological resources encountered and the PRS's description of sensitivity and significance of those resources, and notes regarding if and how the fossil material was curated in accordance with **MM PAL-3**.

Any portions of this report that involve any independent judgment or analysis of the earth's crust, and the rocks and other materials which compose it, must be done by or under the responsible charge of a California licensed Professional Geologist.

MM PAL-8 The project owner, through the designated PRS, shall ensure that all components of the PRMMP are adequately performed, including collection of fossil material, preparation of fossil material for analysis, analysis of fossils, identification and inventory of fossils, preparation of fossils for curation, and delivery for curation of all significant paleontological materials encountered and collected during project construction. The project owner shall pay all curation fees charged by the museum for fossil material collected and curated for paleontological mitigation. The project owner shall also provide the curator with documentation showing the project owner irrevocably and unconditionally donates, gives, and assigns permanent, absolute, and unconditional ownership of the fossil material.

5.6.7 References

ABAG 2020 – Association of Bay Area Governments (ABAG). Existing Landslide Areas. Modified from United States Geological Survey Open File Report 97-745 C. Updated 2020. Accessed February 2, 2026. Accessed online at: https://abag.ca.gov/our-work/resilience/data-research/landslide

ABAG 2022a – Association of Bay Area Governments (ABAG). Probabilistic Seismic Hazard Assessment. Developed in cooperation with United States Geological Survey and California Geological Survey. Updated November 4, 2022. Accessed February 2, 2026. Accessed online at: https://abag.ca.gov/our-work/resilience/data-research/earthquake

ABAG 2022b – Association of Bay Area Governments (ABAG). Liquefaction Susceptibility. Modified from United States Geological Survey Open File Report 00-444 and Open File Report 2006-1037. Updated December 2, 2022. Accessed February 2, 2026. Accessed online at: https://abag.ca.gov/our-work/resilience/data-research/earthquake

ASCE 2022 – American Society of Civil Engineers (ASCE). Minimum Design Loads and Associated Criteria for Buildings and Other Structures. ASCE Standard. ASCE/SEI 7-22. Published by ASCE. January 1, 2022. Accessed on March 23, 2026. Accessed online at: https://www.asce.org/publications-and-news/asce-7

CBC 2022 – California Building Code (CBC). 2022 California Building Code, Title 24, Part 2 (Volumes 1 & 2) with July 2024 Supplement. California Code of Regulations. Effective: January 1, 2023. Version: July 2024. Accessed on February 4, 2026. Accessed online at: https://codes.iccsafe.org/content/CABC2022P1/california-code-of-regulations-title-24

CBC 2025 – California Building Code (CBC). 2025 California Building Code, Title 24, Part 2 (Volumes 1 & 2) with January 2026 errata. California Code of Regulations. Effective: January 1, 2026. Version: January 1, 2026. Accessed on January 22, 2026. Accessed online at: https://codes.iccsafe.org/content/CABC2025P2

CCR 2018a – California Code of Regulations (CCR). Title 14. Natural Resources, Division 6. Resources Agency, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act, Article 9. Contents of Environmental Impact Reports. As amended on December 28, 2018. Accessed on March 6, 2026. Accessed online at: https://govt.westlaw.com/calregs/Document/I894E92475B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)&bhcp=1#co_anchor_IF1D4C2E0EC7711EE882BDF58FB856748

CCR 2018b – California Code of Regulations (CCR). Title 14. Natural Resources, Division 6. Resources Agency, Chapter 3. Guidelines for Implementation of the California Environmental Quality Act, Appendix G. Environmental Checklist Form. As amended on December 28, 2018. Accessed on March 6, 2026. Accessed online at: https://govt.westlaw.com/calregs/Document/I8EA91DA75B4D11EC976B000D3A7C4BC3?viewType=FullText&originationContext=documenttoc&transitionType=CategoryPageItem&contextData=(sc.Default)

CDOC 1989 – California Department of Conservation (CDOC), Division of Mines and Geology. Author: Hasmukhrai H. Majmundar. Landslide Hazards in the Vacaville Area, Solano County, Landslide Hazard Identification Map No. 14. Open-File Report 89-17. Accessed on January 22, 2026. Accessed online at: https://maps.conservation.ca.gov/cgs/lsi/app/

CDOC 2000 – California Department of Conservation (CDOC), State Mining and Geology Board and Division of Mines and Geology. Guidelines for Classification and Designation of Mineral Lands. Special Publication 52. January 2000. Accessed on March 6, 2026. Accessed online at: https://www.conservation.ca.gov/smgb/Guidelines/Documents/ClassDesig.pdf

CDOC 2002 – California Department of Conservation (CDOC), California Geological Survey (CGS). California Geomorphic Provinces. Note 36. Revised December 2002. Accessed on March 6, 2026. Available online at: https://www.conservation.ca.gov/cgs/Documents/Publications/CGS-Notes/CGS-Note-36.pdf

CDOC 2008 – California Department of Conservation (CDOC). California Geological Survey (CGS). Guidelines for Evaluating and Mitigating Seismic Hazards in California. Special Publication 117A. 2008. Accessed on March 18, 2026. Available online at: https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Publications/SP_117a.pdf

CDOC 2009 – California Department of Conservation (CDOC), California Geological Survey (CGS). Compiled by Timothy E. Dawson. Preliminary Geologic Map of the Lodi 30' x 60' Quadrangle, California. 2009. Accessed on February 2, 2026. Available online at: https://www.conservation.ca.gov/cgs/rgm/preliminary

CDOC 2011 – California Department of Conservation (CDOC), California Geological Survey (CGS). Deep-Seated Landslide Susceptibility. Map Sheet 58. May 2011. Accessed on January 21, 2026. Available online at: https://data.ca.gov/dataset/cgs-map-sheet-58-deep-seated-landslide-susceptibility

CDOC 2016 – California Department of Conservation (CDOC). Mines Online Interactive Web Map. 2016. Accessed on January 22, 2026. Accessed online at: https://maps.conservation.ca.gov/mol/index.html

CDOC 2018a – California Department of Conservation (CDOC). California Geological Survey (CGS). Earthquake Fault Zones: A Guide for Government Agencies, Property Owners/Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California. Special Publication 42. Revised 2018. Accessed on January 22, 2026. Accessed online at: https://www.conservation.ca.gov/cgs/publications/sp42

CDOC 2018b – California Department of Conservation (CDOC). California Geological Survey (CGS). Authors: Matt D. O'Neal and Fred W. Guis. Mineral Land Classification: Concrete Aggregate in the Greater Sacramento Area Production-Consumption Region. Special Report 245. 2018. Accessed on January 22, 2026. Accessed online at: https://www.conservation.ca.gov/cgs/Documents/Publications/Special-Reports/SR_245-MLC-SacramentoPCR-2018-Report-a11y.pdf

CDOC 2022 – California Department of Conservation (CDOC), California Geological Survey (CGS). Fault Activity Map of California. Published on December 31, 2012. Last updated on April 11, 2022. Accessed on January 21, 2026. Available online at: https://maps-cadoc.opendata.arcgis.com/maps/cadoc::fault-activity-map-of-california/about?path=

CDOC 2024 – California Department of Conservation (CDOC), California Geological Survey (CGS). Earthquake Zones of Required Investigation. Updated on November 21, 2024. Accessed on January 21, 2026. Accessed online at: https://maps.conservation.ca.gov/cgs/EQZApp/app/

CDOC 2025a – California Department of Conservation (CDOC), California Geological Survey (CGS). Landside Maps and Reports. Published July 16, 2015. Updated February 20, 2025. Accessed on January 21, 2026. Accessed online at: https://www.arcgis.com/home/item.html?id=998ea7bff3854164a5a227edd2c3d0de

CDOC 2025b – California Department of Conservation. California Geological Survey (CGS). Earthquake Shaking Potential for California. Map Sheet 48. Revised 2025. Accessed on January 21, 2026. Accessed online at: https://www.conservation.ca.gov/cgs/sh/earthquake-shaking-potential

CDOC 2026a – California Department of Conservation (CDOC), California Geologic Energy Management Division (CalGEM). Well Finder. Online mapping application last updated on June 2025. Well Statewide Tracking and Reporting System (WellSTAR) database last updated on January 20, 2026. Accessed January 21, 2026. Accessed online at: https://maps.conservation.ca.gov/doggr/wellfinder/

CDOC 2026b – California Department of Conservation (CGS), Division of Mine Reclamation (DMR). AB 3098 List. As effective on January 21, 2026. Accessed on January 21, 2026. Accessed online at: https://www.conservation.ca.gov/smgb/Pages/AB-3098-List.aspx

CFR 2017 – Code of Federal Regulations (CFR). Title 40 – Protection of Environment, Chapter I – Environmental Protection Agency, Subchapter D – Water Programs, Part 130 – Water Quality Planning and Management. As published on January 3, 2017. Accessed on March 6, 2026. Accessed online at: https://www.ecfr.gov/current/title-40/part-130

CFR 2019 – Code of Federal Regulations (CFR). Title 40 – Protection of Environment, Chapter I – Environmental Protection Agency, Subchapter D – Water Programs, Part 127 – Criteria and Standards for the National Pollutant Discharge Elimination System. As amended on June 12, 2019. Accessed on March 6, 2026. Accessed online at: https://www.ecfr.gov/current/title-40/part-125

CFR 2023 – Code of Federal Regulations. Title 40 – Protection of Environment, Chapter I – Environmental Protection Agency, Subchapter D – Water Programs, Part 121 – State Certification of Activities Requiring a Federal License or Permit. As amended on November 27, 2023. Accessed on March 6, 2026. Accessed online at: https://www.ecfr.gov/current/title-40/part-121

DWR 2020 – Department of Water Resources (DWR). SGMA Basin Prioritization Dashboard. Last updated March 13, 2020. Accessed on February 2, 2026. Accessed online at: https://gis.water.ca.gov/app/bp-dashboard/final/

GSA 2022 – The Geological Society of America (GSA). Geologic Time Scale. Version 6.0. Updated October 2022. Accessed on March 18, 2026. Available online at: https://www.geosociety.org/GSA/GSA/timescale/home.aspx

IBC 2024 – International Building Code (IBC). 2024 International Building Code. Version: August 2025. Accessed on June 18, 2026. Available online at: https://codes.iccsafe.org/content/IBC2024V2.0

PRC 1994 – California Public Resources Code (PRC), Division 13. Environmental Quality, Chapter 2.6. General, Section 21081.6. As effective on October 1, 1994. Accessed on March 18, 2026. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=13.&chapter=2.6.&lawCode=PRC

PRC 2025 – California Public Resources Code (PRC), Division 15. Energy Conservation and Development, Chapter 6. Power Facility and Site Certification. As effective on January 1, 2025. Accessed on March 18, 2026. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=15.&title=&part=&chapter=6.&article=

PRC 2026a – California Public Resources Code (PRC), Division 2. Geology, Mines, and Mining, Chapter 7.5. Alquist-Priolo Earthquake Fault Zoning Act. As effective on January 1, 2026. Accessed on March 6, 2026. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?division=2.&chapter=7.5.&lawCode=PRC

PRC 2026b – California Public Resources Code (PRC), Division 2. Geology, Mines, and Mining, Chapter 7.8. Seismic Hazards Mapping Act. As effective on January 1, 2026. Accessed on March 6, 2026. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayText.xhtml?lawCode=PRC&division=2.&title=&part=&chapter=7.8.&article=

PRC 2026c – California Public Resources Code (PRC), Division 2. Geology, Mines, and Mining, Chapter 9. Surface Mining and Reclamation Act of 1975. As effective on January 1, 2026. Accessed on March 6, 2026. Accessed online at: https://leginfo.legislature.ca.gov/faces/codes_displayexpandedbranch.xhtml?tocCode=PRC&division=2.&title=&part=&chapter=9.&article=

Solano County 2008 – County of Solano (Solano County). General Plan. Approved by Solano County Planning Commission as Resolution No. 4500 on June 5, 2008. Approved by Solano County General Plan Citizen's Advisory Committee on February 4, 2008. Approved by Solano County Board of Supervisors as Resolution No. 2008-183 on August 5, 2008. Approved by Solano County Voters as Measure T on November 4, 2008. Published November 2008. Accessed on February 3, 2026. Accessed online at: https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

Solano County 2025 – County of Solano (Solano County). A Codification of the General Ordinances of the County of Solano County, California. Codification services provided by General Code. Current through Ordinance 1864, passed on

November 4, 2025. Accessed on February 4, 2026. Accessed online at: https://www.codepublishing.com/CA/SolanoCounty/

Solano Collaborative 2025 – Solano Subbasin Groundwater Sustainability Agency (GSA) Collaborative and the Solano County Water Agency. Solano County and Solano Subbasin Groundwater Sustainability Agency Subbasin Groundwater Sustainability Annual Report – Water Year 2024. Prepared by Luhdorff and Scalmanini Consulting Engineers for Solano Subbasin GSA Collaborative: Solano GSA, City of Vacaville GSA, Sacramento County GSA, Solano Irrigation District GSA, Northern Delta GSA, and an independent GSA Reclamation District 349. March 31, 2025. Accessed on February 2, 2026. Available online at: https://sgma.water.ca.gov/portal/gspar/preview/458

SWRCB 2026 – California State Water Resources Control Board (SWRCB). Porter-Cologne Water Quality Control Act: Water Code Division 7 and Related Sections). As amended, including Statutes 2025. Published in January 2026. Accessed on March 18, 2026. Accessed online at: https://www.waterboards.ca.gov/laws_regulations/docs/portercologne.pdf

SVP 2010 – Society of Vertebrate Paleontology (SVP). Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources. 2010. Accessed on January 22, 2026. Available online at: https://vertpaleo.org/wp-content/uploads/2021/01/SVP_Impact_Mitigation_Guidelines.pdf

Towhata 2008 – Ikuo Towhata. Geotechnical Earthquake Engineering. Editors: Wei Wu and Ronaldo I. Borja. Springer Series in Geomechanics and Geoengineering. Springer-Verlag Berlin Heidelberg. February 25, 2008. Accessed on March 11, 2026. Accessed online at: https://csl.primo.exlibrisgroup.com/permalink/01CSL_INST/14s4joi/alma9916708264905115

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024e – Tetra Tech (TN 259882). Volume 2 App 2 Project Description Appendices Part 2. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024l – Tetra Tech (TN 259891). Volume 2 App 4-7 Geology & Soils Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/List

TT 2026a – Tetra Tech (TN 268258). Project Description Update #2. Docketed January 16, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026j – Tetra Tech (TN 269465). Data Response Set #7. Dated April 10, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

UCMP 2026 – University of California Museum of Paleontology (UCMP). UCMP Locality Search. 2006. Accessed on February 6, 2026. Accessed online at: https://ucmpdb.berkeley.edu/loc.html

USGS 2011 – United States Geological Survey (USGS). Mineral Resources Online Spatial Data: Interactive Maps and Downloadable Data for Regional and Global Geology, Geochemistry, Geophysics, and Mineral Resources. 2011. Accessed on January 22, 2026. Available online at: https://mrdata.usgs.gov/general/map-us.html

USGS 2015 – United States Geological Survey (USGS). UCERF3: A New Earthquake Forecast for California's Complex Fault System. Prepared in cooperation with the California Earthquake Authority, California Geological Survey, and Southern California Earthquake Center. Fact Sheet 2015-3009. March 2015. Accessed on January 22, 2026. Accessed online at: https://pubs.usgs.gov/fs/2015/3009/pdf/fs2015-3009.pdf

USGS 2016 – United States Geological Survey (USGS). Earthquake Outlook for the San Francisco Bay Region 2014-2043. Fact Sheet 2016-3020. Version 1.1. Revised August 2016. Accessed on January 22, 2026. Accessed online at: https://abag.ca.gov/sites/default/files/fs20163020.pdf

USGS 2018 – United States Geological Survey (USGS). Areas of Land Subsidence in California. December 7, 2018. Accessed on January 21, 2026. Accessed online at: https://www.usgs.gov/tools/areas-land-subsidence-california

USGS and CDOC 2026 – United States Geological Survey (USGS) and California Department of Conservation (CDOC), California Geological Survey (CGS). Quaternary fault and fold database of the United States. Accessed on March 5, 2026. Accessed online at: https://www.usgs.gov/natural-hazards/earthquake-hazards/faults

Vacaville 2015 – City of Vacaville (Vacaville). General Plan. Approved by Resolution No. 2015-074 on August 11, 2015. Accessed on March 23, 2026. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents

Vacaville 2025 – City of Vacaville (Vacaville). Vacaville Municipal Code. Codification services provided by General Code. Current through Ordinance No. 2005, passed

on October 28, 2025. Published online on March 23, 2026. Accessed on March 23, 2026. Accessed online at: https://ecode360.com/VA4679

Youd 2018 – T. Leslie Youd. Application of MLR Procedure for Prediction of Liquefaction-Induced Lateral Spread Displacement. Journal of Geotechnical and Geoenvironmental Engineering, Vol 144, No. 6, pp. 297-313. April 12, 2018. Accessed on March 11, 2026. Accessed online at: https://ascelibrary.org/doi/full/10.1061/(ASCE)GT.1943-5606.0001860

Youd et al. 2001 – T. L. Youd, I. M. Idriss, Ronald D. Andrus, Ignacio Arango, Gonzalo Castro, John T. Christian, Richardo Dobry, W. D. Liam Finn, Leslie F. Harder, Mary Ellen Hynes, Kenji Ishihara, Joseph P. Koester, Sam S.C. Liao, William F. Marcuson, Geoffrey R. Martin, James K. Mitchell, Yoshiharu Moriwaki, Maurice S. Power, Peter K. Robertson, Raymond B. Seed, and Kenneth H Stokoe. Liquefaction Resistance of Soils: Summary Report from the 1996 NCEER and 1998 NCEER/NSF Workshops on Evaluation of Liquefaction Resistance of Soils. Journal of Geotechnical and Geoenvironmental Engineering, Vol 127, No. 10, pp. 297-313. April 2001. Accessed on March 11, 2026. Accessed online at: https://d1wqtxts1xzle7.cloudfront.net/83316968/Youd_20__20Idriss_202001_20-_20nceer_202001-libre.pdf?1649249351=&response-content-disposition=inline%3B+filename%3DLiquefaction_Resistance_of_Soils_Summary.pdf&Expires=1773261313&Signature=gH7J90CSjwa-AGqMjh~c1-13s5fSqcUS8gbyLMzzKKYvHVus0QT8ljH~vM2xWIBaEgjhdh4~sAadF9BHXRII1xoZBiLCq49YAu74uKGlwy~EV0zeKcrDoAqXIA1AF0ckXm1hKqy5UisURBE~ri4mqvkSkkOlmV1OArEtYAoPvxFkqy2V-R3t5YPkx4MKVnOdPRC8qlpUGa16O-Vujt0xrrJvOp98rAmhZqHp19jVFuT1HvGdB37hYicsoN6gEr~WK4-APBBiNv~BvBzhBS~GmIOseu0HsMjz~qQMpPTmJ6K9q1u5vBbp6X4WTS9hUDQ3uiejksYsHBvIYd0zqDpMTw__&Key-Pair-Id=APKAJLOHF5GGSLRBV4ZA

5.7 Hazards, Hazardous Materials/Waste, and Wildfire

This section evaluates the potential impacts of the proposed construction and operation of the Corby Battery Energy Storage System (BESS) Project or project with respect to hazards, hazardous materials/waste, and wildfire. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.7.1 Environmental Setting

Existing Conditions

The project parcel is bound on all sides by existing agricultural lands, with a rural residence located across Kilkenny Road directly to the north. Additional rural residences also exist in the project vicinity, both to the south and west of the project site. The project site is located approximately 250 feet southeast of the City of Vacaville jurisdictional boundary, and approximately 5 miles northeast of the city center. I-80 is approximately 0.6 miles northwest of the project site. The energy would be transported from the project substation to the nearby PG&E Vaca-Dixon Substation through a 1.1-mile-long 230-kV gen-tie transmission line.

Hazardous Materials

Hazard Exposure. A hazardous material exposure route is the way a contaminant enters an individual or population. Typically, hazardous material exposure occurs by one of the three exposure routes: inhalation, ingestion, or dermal (U.S. EPA, 2025).

Hazardous Materials. Hazardous materials are defined by federal and state law that aim to protect public health and the environment. Hazardous materials have certain chemical, physical, or infectious properties that cause them to be considered hazardous. For purposes of this section, the term "hazardous materials" refers to both hazardous substances and hazardous wastes. Under federal and state laws, any material, including wastes, may be considered hazardous if it is specifically listed by statute as such or if it is toxic (causes adverse human health effects), ignitable (has the ability to burn), corrosive (causes severe burns or damage to materials), or reactive (causes explosions or generates toxic gases). Hazardous substances are defined in the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 101(14) by reference to lists of substances designated under specific authorities. Hazardous materials are defined in the Health and Safety Code section 25501(n)(1) to include substances listed in 25501(n)(2)(A-E). California Code of Regulations, Title 22, Chapter 11 provides procedures for the identification and listing of hazardous wastes.

The project would involve limited transport, storage, use, and disposal of hazardous materials typically used for industrial facilities during construction, operation and

maintenance, and decommissioning activities. Some examples of hazardous materials that may be used during construction, operation and maintenance, and decommissioning activities would include unleaded gasoline, diesel fuel, oil, lubricants (for example, motor oil, transmission fluid, and hydraulic fluid), solvents, adhesives, paint materials, and lithium-ion batteries. Operation and maintenance of the project would not require as many hazardous materials as construction or decommissioning. All hazardous materials would be transported, stored, handled, and used in accordance with applicable laws, ordinances, regulations, and standards (LORS). A summary of hazardous materials that could be used and stored for the project during construction, operation, and maintenance is presented in **Table 5.7-1, Hazardous Materials Use and Storage During Construction and Operation**. This table identifies materials that are hazardous or acutely hazardous, as defined in Title 22 California Code of Regulations Section (§) 66261.20 et seq., at full buildout (year 12, 341 BESS enclosures), following three planned augmentation events (years 6, 9, and 12) (TT 2026e).Health hazards, toxicity, flammability, and chemical incompatibility information are summarized for these materials in **Table 5.7-2, Toxicity, Reactivity, and Flammability of Hazardous Substances Stored On-site**.

TABLE 5.7-1 HAZARDOUS MATERIALS USE AND STORAGE DURING CONSTRUCTION AND OPERATION

Hazardous Material	Use	Quantity (lbs)	Storage Location
Lithium iron phosphate Co-Crystalized	Battery	8,970,609	Within sealed battery cells [42% by wt]
Copper	Battery	1,459,460	Within sealed battery cells [7% by wt]
Ethyl Methyl Carbonate	Battery electrolyte	3,829,429	Within sealed battery cells [18% by wt]
Aluminum	Battery	1,946,681	Within sealed battery cells [9% by wt]
Polyvinylidene Fluoride (1,1-Difluorothene homopolymer)	Battery	275,577	Within sealed battery cells [1% by wt]
Carbon	Battery	4,676,004	Within sealed battery cells [22% by wt]
Aluminum	Module	271,168	Within Module [10% by wt]
Iron	Module	1,627,011	Within Module [6% by wt]
Carbonic dichloride polymer with 4,4'-(1-methylethylidene) bis[phenol], 4-(1,1-dimethylethyl) Phenyl ester	Module	542,337	Within Module [2% by wt]
1-Propene polymer with ethene	Module	542,337	Within Module [2% by wt]
2.6-Dimethylphenol homopolymer	Module	271,168	Within Module [1% by wt]
Copper	Module	271,168	Within Module [1% by wt]
Mineral oil	Insulating oil	39,303 gallons	Within transformers
Sulfur Hexafluoride	Circuit Breakers	500	Within HV breakers
Opteon™ XP10 (R-513a)	Refrigerant	346	BESS enclosures
Ethylene Glycol	Coolant	1,992	BESS enclosures
HFC-32 (Difluoromethane)	Coolant	752	BESS enclosures
Gasoline	Construction Equipment	50 gallons	Within the temporary construction laydown area
Diesel	Construction Equipment	1,300 gallons	Within the temporary construction laydown area
Lubricants	Construction Equipment	50 gallons	Within the temporary construction laydown area

TABLE 5.7-2 TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Material	CAS Number	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Gasoline	8006-61-9	Clear, colorless to amber-colored liquid with a petroleum odor	Skin, eye and respiratory irritant. Exposure can cause drowsiness and dizziness. May be fatal if swallowed and enters airways. May be carcinogenic.	Stable at normal conditions. Incompatible with strong oxidizing agents.	Flammable
Diesel	68476-34-6	Straw yellow to dark colored liquid with a petroleum odor	Skin, eye and respiratory irritant. May be fatal if swallowed and enters airways. May be carcinogenic.	Stable at normal conditions. Incompatible with strong oxidizing agents.	Flammable
Lubricants	74869-22-0	Viscous and odorless liquid, generally brown to black color	Skin, eye and respiratory irritant. Exposure can cause drowsiness and dizziness. May cause nausea if ingested. May be carcinogenic.	Non-reactive. Incompatible with strong acids, strong bases, strong oxidizing agents.	Flammable
Lithium iron phosphate Co-Crystalized	15365-14-7	Gray, red-grey, brown or black solid	Hazardous in case of skin contact (irritant), of eye contact (irritant), may cause respiratory irritation and may be carcinogenic	Conductive materials, water, seawater, strong oxidizers and strong acids	Not Available
Copper	7440-50-8	Metallic solid	Eye and respiratory irritant in long-term exposure	Low chemical reactivity	Not flammable
Ethyl Methyl Carbonate	623-53-0	Colorless liquid	Skin, eye, and respiratory irritant.	Strong oxidizing agents, strong acids and strong bases	Flammable
Aluminum	7429-90-5	Metallic solid, white or grey	Skin and eye irritant. Exposure of dust can cause “metal fume fever”.	Strong oxidizing agents	Flammable
Polyvinylidene Fluoride (1,1-Difluorothene homopolymer)	24937-79-9	Colorless gas	Skin, eye, and respiratory irritant. Exposure can cause headache, dizziness, nausea and vomiting.	Strong oxidizing agents	Flammable
Carbon	7440-44-0	Solid graphite, black	Minor skin and eye irritant. May cause respiratory irritation in repeated/ prolonged exposure.	Non-reactive	Not flammable

TABLE 5.7-2 TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Material	CAS Number	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Iron	7439-89-6	Metallic solid (grey)	Hazardous in case of skin contact (irritant), of eye contact (irritant), may cause respiratory irritation.	Strong oxidizers and strong acids	Not Flammable
Carbonic dichloride polymer with 4,4'-(1-methylethylidene) bis[phenol], 4-(1,1-dimethylethyl) phenyl ester	103598-77-2	Solid plastic resin (clear/white pellets)	Hazardous in case of skin contact (irritant), of eye contact (irritant) may cause respiratory irritation. Molten material may cause thermal burns.	Non-reactive. Incompatible with strong acids.	Combustible
1-Propane polymer with ethene	9010-79-1	White/translucent solid plastic resin	Dust may irritate eyes, skin, and respiratory tract.	Non-reactive. Incompatible with strong acids.	Combustible
2,6-dimethylphenol homopolymer	25134-01-4	Off-white to white powder solid	Minor health hazard.	Non-reactive. Incompatible with strong acids.	Combustible.
Mineral oil	8012-95-1	Oily, clear liquid	Minor health hazard	Sodium hypochlorite; oxidizers	Can be combustible, depending on the manufacturer
Sulfur hexafluoride	2551-62-4	Colorless gas	Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation (lung irritant)	Chemically reactive metals: potassium, calcium, powdered aluminum, magnesium, and zinc.	Not flammable
Opteon™ XP10 (R-513a)	754-12-1, 811-97-2	Colorless liquified gas	Overexposure may cause dizziness and loss of concentration. At higher levels, nervous system depression and cardiac arrhythmia may result from exposure. Vapors displace air and can cause asphyxiation in confined spaces.	Non-reactive	Not flammable

TABLE 5.7-2 TOXICITY, REACTIVITY, AND FLAMMABILITY OF HAZARDOUS SUBSTANCES STORED ON-SITE

Hazardous Material	CAS Number	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Ethylene glycol	107-21-1	Colorless liquid	Contact can irritate the eyes and skin, while inhaling it can irritate the throat and nose. Other short-term effects include nausea, vomiting, weakness, and abdominal pain. Higher exposure can lead to headache, dizziness, slurred speech, convulsions, loss of coordination, and coma.	Strong acids and oxidizers	Not flammable
HFC-32 (Difluoromethane)	75-10-5	Colorless liquified gas	Irritation may cause dizziness, headache and nausea	Non-reactive. Incompatible with strong acids.	Flammable

Source: TT 2025d; TT 2026e

Environmental Contamination. Existing and past land use activities are commonly used as indicators of sites or areas where hazardous material storage and use may have occurred or where potential environmental contamination may exist. For example, many historic and current industrial sites have soil or groundwater contaminated by hazardous substances. Environmental contamination sources can include on-site leaking underground tanks in commercial and rural areas, historic pesticide use, contaminated surface runoff from polluted sites, and contaminated groundwater plumes migrating from off-site locations.

In July 2024, NextEra Energy Environmental Services completed a Phase I Environmental Site Assessment (ESA) report of the property on approximately 40 acres on behalf of Corby Energy Storage, LLC, the project applicant. The intended use of this Phase I ESA is for due diligence in support of the developing renewable energy infrastructure. The Phase I ESA was conducted in conformance with the requirements of ASTM International (ASTM) Designation E1527-21 and Title 40 of the Code of Federal Regulations, Part 312, except as may have been modified by the scope of work, and terms and conditions, requested by the project owner. The Phase I ESA did not include contacting the Solano County Resources Management Division and Department of Environmental Health Hazardous Materials Division as part of the records search, as a prior Phase I completed at the property in April of 2023 indicated that county agencies were either non-responsive or their records contained no information regarding the property (TT 2024s).

The Phase I ESA reviewed records from regulatory agencies with jurisdiction over the project site including the California Regional Water Quality Control Board – Central Coast Region, the California Environmental Protection Agency, Department of Toxic Substances Control (CAL-EPA DTSC). The Phase I ESA did not identify any known hazardous material or environmental contamination sites within or adjacent to the project site. The Phase I ESA concluded the following:

- No buildings or structures are located on the subject property. No stressed vegetation, areas of staining, or other evidence of hazardous substance releases were observed at the subject property.
- Historic agricultural use of the subject property may have resulted in the presence of residual agrichemical constituents, including organochlorinated compounds and metals, in surficial soils. Given the proposed commercial/industrial use of the subject property, concentrations of the residual agrichemical constituents are considered likely to be below applicable risk-based regulatory levels; but their potential presence should be considered when evaluating potential risks.
- Recognized Environmental Conditions (RECs) were not identified in association with the project site.

Hazardous Waste and Substance Sites. CEC staff reviewed the State Water Resources Control Board (SWRCB) Geotracker (SWRCB, 2025) and the DTSC EnviroStar

(DTSC, 2025) websites, which did not identify any known hazardous material or environmental contamination sites within or close enough to affect the project site.

Land Use and Sensitive Receptors

Land uses in the immediate vicinity of the project include agricultural and rural residential uses. Two rural residences are adjacent to the project site. No schools, hospitals, day-care facilities, emergency response facilities or long-term health care facilities are within a 1-mile radius of the project site.

Airports. There are no private airstrips within the vicinity of the project site. The closest airport to the project site is the Nut Tree Airport, approximately 2.9 miles southwest of the project Site. The project is not located within the airport influence area (AIA) of the Nut Tree Airport Plan. However, the project site is located approximately 7.25 miles north of Travis Air Force Base and is within the Airport Influence Area (AIA), Zone D of the Travis Air Force Base Land Use Compatibility Plan (Travis AFB LUCP; Solano County 2024a).

Schools. There are no schools within 0.25 miles of the project site. The nearest school to the project site is the Academy of 21st Century Learning, approximately 1.75 miles to the west of the project site.

Emergency Evacuation Routes

Primary access to the project site during construction and operation would be from Kilkenny Road to the north and Byrnes Road to the east. These roads would serve as the main ingress/egress for workers, emergency personnel, and potential evacuation, if needed. No additional public roads are located in the immediate vicinity of the project site.

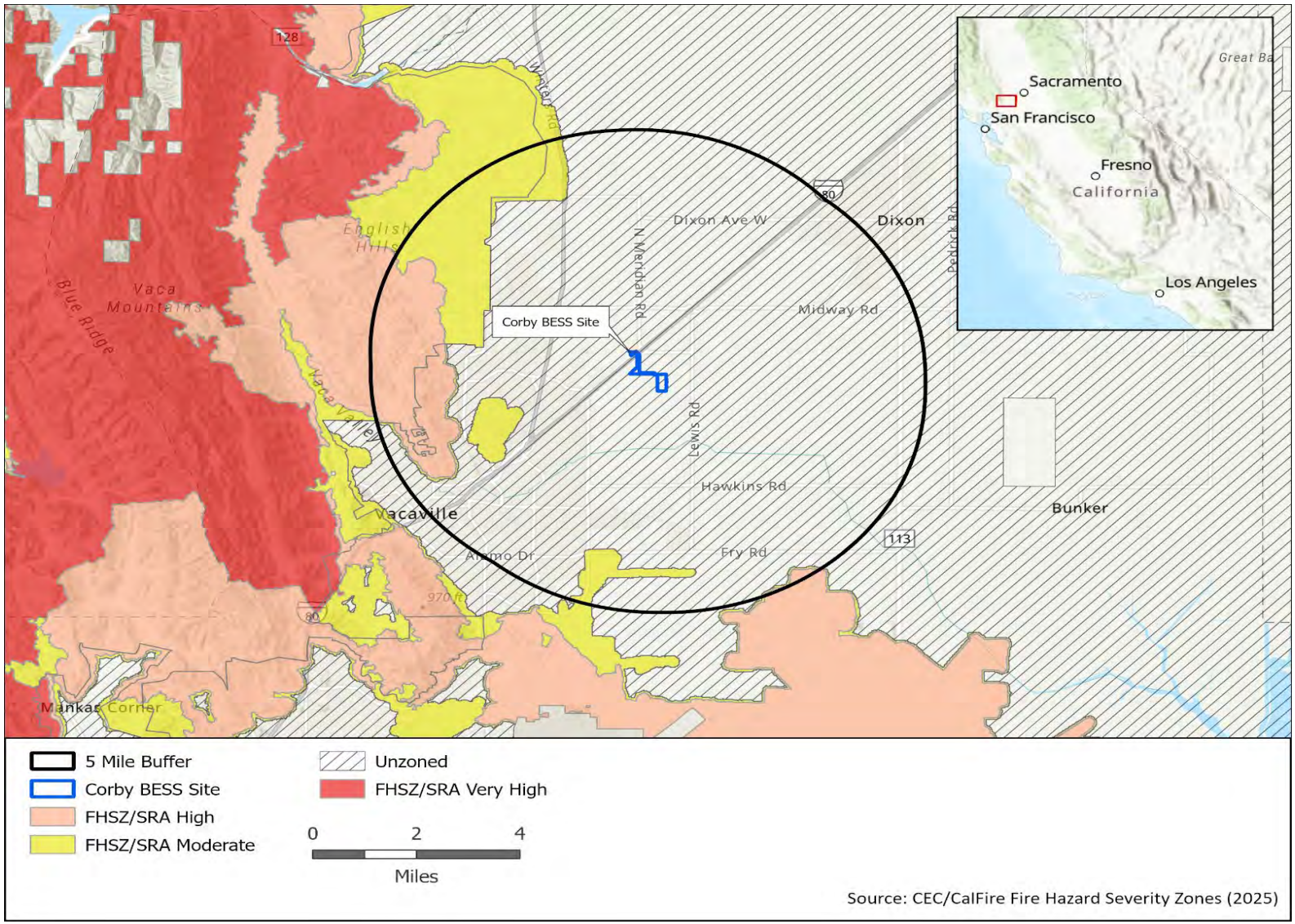
Wildfire

CAL FIRE Hazard Severity Zones. The Department of Forestry and Fire Protection (CAL FIRE) identifies and maps areas of significant fire hazards based on fuels, terrain, and other relevant factors. These maps categorize this information by Fire Hazard Severity Zones (FHSZ), grouped into unzoned (less than moderate fire hazard severity), moderate, high, and very high zones. Wildland FHSZ in California are divided into State, local, or federal government responsibility areas. State Responsibility Areas (SRA) are designated lands in California where the state has the primary financial responsibility for fire protection and suppression. Local Responsibility Areas (LRA) are locations where financial responsibility of preventing and suppressing wildfires is not that of the State or federal government. Federal Responsibility Areas (FRA) are locations where the financial responsibility of preventing and suppressing fires falls primarily on a federal agency. The State adopted updated FHSZ maps on February 24, 2025. As shown in **Figure 5.7-1, Fire Hazard Severity Zone Map**, the project site is not within an SRA

and is therefore located in an LRA, and it is not located on federal land. (CAL FIRE, 2025a). The project site is located within an unzoned LRA (CAL FIRE 2025b).

California Public Utilities Commission (CPUC) High Fire-Threat District Map. Over the last two decades, the CPUC has adopted a series of fire safety rules which includes the preparation of Fire-Threat and High Fire-Threat District (HFTD) Maps and the identification, evaluation, and adoption of more fire-safety regulations for the HFTDs. Areas mapped as high fire threat are required (under CPUC General Orders 95 165, and 166) to have increased patrols along overhead lines, increased vegetation clearances and frequency of vegetation clearance, increased inspections of aerial communications facilities, and increased maintenance and repairs to correct fire hazards. The HFTD maps identify three tiers of fire threat/risk: Tier 1 zones near communities, roads, and utility lines, and are a direct threat to public safety; Tier 2 fire-threat areas outline areas where there is a higher risk (including likelihood and potential impacts on people and property) from utility related wildfires; and Tier 3 fire-threat areas outline areas where there is an extreme risk (including likelihood and potential impacts on people and property) from utility related wildfires. The project is not within a HFTD zone and not adjacent to any HFTD zone (CPUC 2025).

Figure 5.7-1 Fire Hazard Severity Zone Map



Fire History. The Solano County Multi-Jurisdictional Hazard Mitigation Plan identifies the mountainous areas in the northwestern portion of the county as the most common region for fires to occur, with a 100 percent annual chance of a fire burning. The Fire and Resource Assessment Program (FRAP) annually maintains and distributes an historical fire perimeter data set from across public and private lands in California. The GIS data is jointly developed with the cooperation of the United States Forest Service Region 5, the Bureau of Land Management, the National Park Service and the Fish and Wildlife Service.

The **Historic Wildfires Map, Figure 5.7-2**, shows the FRAP database of historic fires within 5 miles of the project site. The darker colors on **Figure 5.7-2** are areas that have burned three or more times since 1950. This figure shows that there have been no major fires in the immediate and surrounding areas of the project since 1981. The 1981 Whykoff #2 Fire burned for 392.21 acres and was approximately 1.61 miles from the nearest point of the project site. **Figure 5.7-2** shows that the area west of I-505 is a common burn area. This area has rolling terrain whereas the project site is in a flat, agricultural region.

The largest historic fires of this area are summarized in **Table 5.7-3, Historic Wildfires**.

TABLE 5.7-3 HISTORIC WILDFIRES

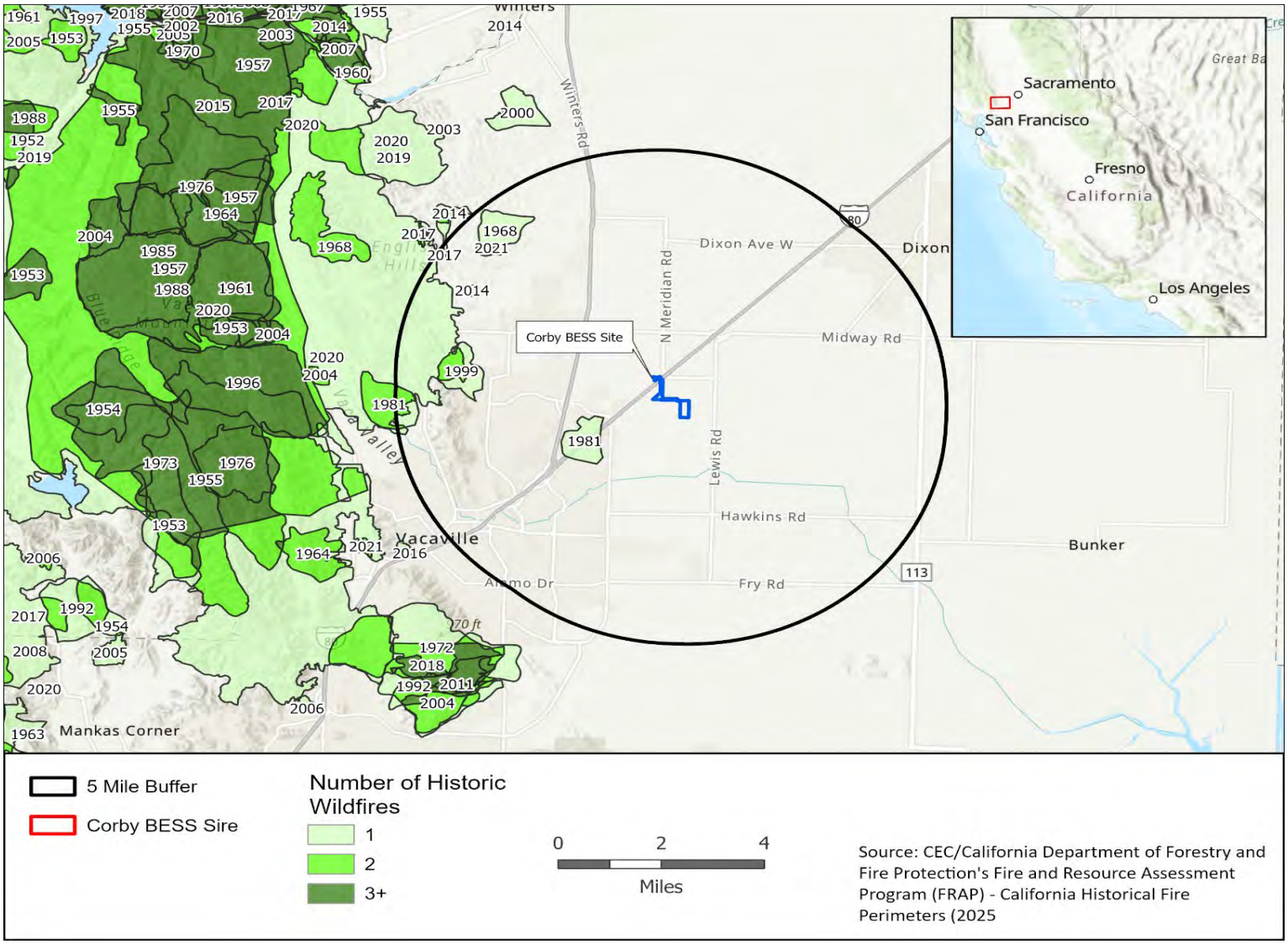
Year	Fire Name	Acres Burned	Approximate Distance (miles) to Nearest Point of Project Site
1981	Whykoff #2 Fire	392.21	1.61
1999	Browns Fire	437	3.8
2020	Hennessey Fire	305,352	4.25
2020	Quail Fire	1,841	4.7
1981	Bucktown Fire	614	5.2
1988	Miller Fire	34,564	6.5
1968	Martell Fire	888	6.7
1955	Gates Canyon Fire	5,551	7
1996	Gates Fire	2,985	7
1961	Peterson Estate Fire	1,807	8
1957	Peterson Estates Fire #2	6,258	8

While multiple wildfires have occurred within 5 miles of the project site, GIS data indicates areas directly adjacent to the project site are not highly susceptible to wildfire. Additionally, GIS data from FRAP confirms the information in the Solano County Multi-Jurisdictional Hazard Mitigation Plan that the primary fire dangers are in the northwestern mountainous region of the county, to the west of I-505. No historic fires have burned onto the project site.

Figure 5.7-2 includes fire perimeter data dating to the late 1800s but is incomplete due to the fact that it only includes fires over 10 acres in size and has incomplete perimeter data, especially before the mid-20th century. However, the data does provide a summary of recorded fires and can be used to show whether large fires have

occurred in or near the project area, which would indicate the potential for future fires in the area of the project site.

Figure 5.7-2 Historic Wildfires Map



Regulatory

LORS related to hazardous materials, hazardous waste, hazardous substances, aviation safety, hazards, and wildfire are summarized below. Details regarding federal, state, and local LORS that apply to the project are included. CEC staff's analysis of project conformance with these LORS is presented in **Table 5.7-4** and **Table 5.7-5,** Conformance with Applicable LORS.

Federal

Resource Conservation and Recovery Act. The Resource Conservation and Recovery Act (RCRA) (42 U.S.C., § 6901 et seq.) authorizes the EPA to regulate hazardous waste from "cradle to grave" (generation, transportation, treatment, storage, and disposal). The EPA approved California's RCRA program, referred to as the Hazardous Waste Management Program (Hazardous Waste Control Law, Health and Safety Code, § 25100 et seq.) in 1992.

Toxic Substances Control Act. The Toxic Substances Control Act (TSCA) (15 U.S.C., § 2601 et seq.) authorizes the EPA to require reporting, record-keeping, testing requirements, and restrictions related to chemical substances or mixtures. It also addresses production, importation, use, and disposal of specific chemicals, such as poly-chlorinated biphenyls (PCBs), asbestos-containing materials, lead-based paint, and petroleum.

Comprehensive Environmental Response, Compensation, and Liability Act. The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (42 U.S.C., § 9601 et seq.), including the Superfund program, provides broad federal authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health or the environment.

Department of Transportation. The United States Department of Transportation (DOT) is the primary federal agency responsible for regulating the proper handling and storage of hazardous materials during transportation (49 CFR, §§ 171-177 and 350-399).

Clean Water Act. The Clean Water Act (CWA) is the principal federal statute protecting navigable waters and adjoining shorelines from pollution. The law was enacted with the intent of restoring and maintaining the chemical, physical, and biological integrity of the waters of the United States. Since its enactment, the CWA has formed the foundation for regulations detailing specific requirements for pollution prevention and response measures. The EPA implements provisions of the CWA through a variety of regulations, including the National Contingency Plan, and the Oil Pollution and Prevention Regulations. Implementation of the CWA is the responsibility of each state.

As part of the CWA, the U.S. EPA oversees and enforces the Oil Pollution Prevention regulation (Title 40, CFR, Part 112), which is often referred to as the Spill Prevention

Control, and Countermeasure (SPCC) "SPCC rule" because the regulations describe the requirements for facilities to prepare, amend, and implement SPCC Plans. A facility is subject to SPCC regulations if the total above ground oil storage capacity exceeds 1,320 gallons, or the underground oil storage capacity exceeds 42,000 gallons, and if, due to its location, the facility could reasonably be expected to discharge oil into or upon the "navigable waters" of the United States. The rule specifies that proactive, and not passive, measures be used to respond to oil discharges.

Federal Aviation Administration. The Federal Aviation Administration (FAA) Part 77—Safe, Efficient Use, And Preservation of The Navigable Airspace (49 CFR, Part 77) establishes standards and notification requirements for objects that may impact navigable airspace. Airports and navigable airspace that are not administered by the Department of Defense (DOD) are under the jurisdiction of the FAA. This regulation includes: (a) FAA notification requirements for proposed construction, or the alteration of existing structures, that meet specific standards; (b) the standards used to determine obstructions to air navigation, and navigational and communication facilities; (c) the process for aeronautical studies of obstruction to air navigation or navigational facilities to determine the effect on the safe and efficient use of navigable airspace, air navigation facilities or equipment; and (d) the process to petition the FAA for discretionary review of determinations, revisions, and extensions of determinations. Additionally, FAA standards and Advisory Circular 70/7460-1M generally require any temporary or permanent structure, including appurtenances, that exceeds an overall height of 200 feet above ground level (AGL) to meet the requirements to be marked or lighted.

Hazardous Materials Transportation Act. DOT, in conjunction with the EPA, is responsible for enforcement and implementation of federal laws and regulations pertaining to safe storage and transportation of hazardous materials under the Hazardous Materials Transportation Act (HMTA) 49 U.S.C., § 5101-5128. DOT regulations implementing the Act (49 CFR, parts 171-180), regulate the transportation of hazardous materials, types of material defined as hazardous, and the marking of vehicles transporting hazardous materials. This also includes regulations relevant to the storage of explosives, as well as the packaging, labeling, materials compatibility, driver qualificators, and safety of transported explosives.

State

California Environmental Protection Agency. The California Environmental Protection Agency (CalEPA), created in 1991, unified California's environmental authority in a single cabinet-level agency and brought the California Air Resources Board (CARB), SWRCB, Regional Water Quality Control Boards (RWQCBs), Integrated Waste Management Board, DTSC, Office of Environmental Health Hazard Assessment, and Department of Pesticide Regulation under one agency.

The California Hazardous Waste Control Law. The California Hazardous Waste Control Law (HWCL) (Health and Safety Code, § 25100 et seq.) and implementing

regulations is the state law regulating hazardous waste in California. HWCL regulates management of hazardous waste, from hazardous waste generation to management, transportation, and ultimately disposal of waste into a state or federally authorized facility. The HWCL, California Code of Regulations, title 22, Chapter 11, Appendix X, contains a list of 791 chemicals and 66 common names of waste. If the waste is listed or contains a listed chemical in Appendix X, it creates a presumption that the waste may be hazardous due to the presence of that chemical. The HWCL also contains requirements for identifying, managing, storing, transporting and labeling hazardous wastes; establishes permit requirements for treatment, storage, disposal and transportation; and provides land disposal restrictions for certain hazardous wastes.

Department of Toxic Substances Control. DTSC is a department of CalEPA and is the primary agency in California that administers the California Hazardous Waste Control Law, regulates hazardous waste, oversees clean-up of existing contamination, and regulates chemicals in products.

Unified Hazardous Waste and Hazardous Materials Management Regulatory Program. The Unified Program requires CalEPA to certify local government agencies, known as Certified Unified Program Agencies (CUPAs) as able to implement all the required environmental programs and to consolidate, coordinate and make them consistent within their jurisdiction. The Unified Program includes six programs: hazardous waste generators and hazardous waste onsite treatment; underground storage tanks; aboveground storage tanks; hazardous materials release response plans and inventories; risk management and prevention programs; and Unified Fire Code hazardous materials management plans and inventories (Health and Safety Code §25404 et seq.). The Unified Program requires CalEPA to certify local government agencies, known as Certified Unified Program Agencies (CUPAs) as able to implement all the required environmental programs and to consolidate, coordinate and make them consistent within their jurisdiction. State partner agencies involved in the implementation of the Unified Program and providing technical assistance to CUPAs include CalEPA, CAL FIRE, DTSC, and SWRCB. The CUPA for the project area is the Solano County Department of Resource Management, Environmental Health Services Division.

California Department of Industrial Relations, Division of Occupational Safety and Health Administration. The California Occupational Safety and Health Administration (Cal/OSHA) is the primary agency responsible for worker safety. They oversee the handling and use of hazardous materials (Cal. Code Regs., tit. 8 Sections 5139-5223), and the protection of workers exposed to wildfire smoke (Cal. Code Regs., tit. 8 Section 5141.1). Cal/OSHA standards are generally more stringent than federal regulations. Under Sections 337-3339, employers are required to monitor worker exposure to listed hazardous substances and notify workers of exposure. The regulations under Sections 337-339 specify requirements for employee training, availability of safety equipment, accident-prevention programs, and hazardous substance exposure warnings. Section 5141.1 requires identification or harmful

exposures, a system for communicating wildfire smoke hazards, and training and instruction about wildfire smoke hazards.

California Public Utilities Commission. The California Public Utilities Commission (CPUC) regulates private investor-owned utilities in the state of California. The following CPUC General Orders are applicable to the project.

General Order 95. CPUC General Order 95 applies to construction and reconstruction of overhead electric lines. General Order 95 includes Rules which apply to overhead electric lines located in Tier 2 or Tier 3 High Fire Threat Districts (HFTDs), which include corrective actions, maintenance, increased inspection, vegetation management to establish clearances, and establishment of minimum vertical, horizontal, and radial clearances of wires from other wires.

General Order 165. CPUC General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. A "Patrol" inspection, defined as a simple visual inspection of utility equipment and structures that is designed to identify obvious structural problems and hazards, must be performed at least once per year for each piece of equipment and structure. "Detailed" inspections, where individual pieces of equipment and structures are carefully examined, are required every five years for all overhead conductor and cables, transformers, switching/protective devices, and regulators/capacitors. A utility subject to this General Order must submit an annual report of its inspections by July 1 of each year for the previous year.

General Order 166. General Order 166 requires that Investor-Owned Utilities (IOUs) develop a Fire Prevention Plan, which describes measures that the electric utility will implement to mitigate the threat of power line fires. Under General Order 166 the IOUs are required to outline a plan to mitigate power line fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning in a high fire threat area. IOUs are also required to prepare an emergency response plan. Further, utilities are required to report annually to the CPUC regarding compliance with General Order 166.

Defensible Space and the Fire Safe Regulations. State law requires a minimum clearance (defensible space) of 100-feet around structures (Pub. Res. Code §§ 4290, 4291). Implementing regulations (the "Fire Safe Regulations") provide related requirements to be implemented in a SRA including road standards for fire equipment access (Cal. Code Regs., tit. 14, § 1273 et seq.); standards for signs identifying streets, roads, and buildings (Cal. Code Regs., tit. 14, § 1274 et seq.); requirements for minimum private water supply reserves for emergency fire use (Cal. Code Regs., tit. 14, § 1275 et seq.); and requirements for fuel breaks such as defensible space and greenbelts (Cal. Code Regs., tit. 14, §§ 1272, 1276 et seq.).

California Public Resources Code – Fire Protection. The California Public Resources Code (PRC) Division 4, Part 2 – Protection of Forest, Range, and Forage

Lands includes prohibited activities, fire safety and prevention provisions that apply to SRAs, forested areas, timber harvesting areas, and high fire danger areas.

Except as provided, PRC Sections 4292 and 4293 require any person that owns, controls, operates, or maintains any electrical transmission or distribution line upon any mountainous land, or in forest-covered land, or grass covered land, during such times and in such areas as are determined to be necessary by the director or the agency which has primary responsibility for fire protection of such areas, to maintain around and adjacent to any pole or tower which supports a switch, fuse, transformer, lightning arrester, line junction, or dead end or corner pole, a firebreak which consists of a clearing of not less than 10 feet in each direction from the outer circumference of such a pole or tower, and to maintain clearances of specified distances.

PRC section 4119 authorizes CAL FIRE or its authorized agent to inspect properties to determine whether they comply with state forest and fire laws, regulations, or use permits. Section 4427 limits the use of any motor, engine, boiler, stationary equipment, welding equipment, cutting torches, tarpots, or grinding devices which may generate a spark or flame if the equipment is located on or near forested land or land covered in bush or grass. It also establishes requirements such as clearing flammable material within 10 feet of the area of operation, as well as carrying fire response equipment such as a shovel, backpack pump water type fire extinguisher. Section 4428 requires certain firefighting equipment to be used when operating internal combustion engines on or near land covered by forest bush or grass between April 1 and December 1 of any year, or other times when ground litter and vegetation could sustain combustion and facilitate the spread of fire.

PRC section 4431 requires users of gasoline-fueled internal combustion-powered equipment located within 25 feet of forest, brush, or grass to keep firefighting tools at the immediate location of use. Section 4442 restricts the use and operation of any internal combustion engine that uses hydrocarbon fuels on any forest, brush, or grass areas unless the engine is equipped with a spark arrestor, as defined section 4442(c) and pursuant to section 4443.

Porter-Cologne Water Quality Act. This state law provides a comprehensive water quality management system for the protection of California waters. The act designates the SWRCB as the ultimate authority over State water rights and water quality policy and also established nine RWQCBs to oversee water quality on a day-to-day basis at the local and regional level. The RWQCBs have the responsibility of granting NPDES permits and setting waste discharge requirements for stormwater runoff from construction sites.

Department of California Highway Patrol. The Department of California Highway Patrol is the primary agency responsible for enforcing the regulations related to the

transport of hazardous materials on California roads and highways (Cal. Code Regs., tit. 13, §§ 1160-1167).

Hazardous Materials Release Response Plans and Inventory Law. The California Hazardous Materials Release Response Plan and Inventory Law of 1985 (Business Plan Act, Health and Safety Code, § 25500 et seq.) requires businesses that store or use hazardous materials to prepare a Hazardous Materials Business Plan (HMBP) and submit it to the CUPA. An HMBP includes details of a facility and business conducted at the site, an inventory of hazardous materials that are handled and stored on-site, an emergency response plan, and a safety and emergency response training program for new employees with an annual refresher course.

California Accidental Release Program. Under the California Accidental Release Program (CalARP) regulations, facilities that store extremely hazardous substances or regulated substances above the threshold quantities must register with the CalARP Program and submit a Risk Management Plan (RMP).

Aboveground Petroleum Storage Act Program. 40 CFR Part 112, the aboveground petroleum storage act (APSA) program requires preparation of a Spill Prevention, Control, and Countermeasure (SPCC) plan for tank facilities storing greater than 660 gallons of petroleum in a single aboveground storage tank (AST) or the total petroleum storage at a tank facility is greater than 1,320 gallons (including ASTs, oil-filled equipment and drums) or where there is a reasonable possibility that the tank(s) or equipment may discharge oil in “harmful quantities” into navigable waters or adjoining shores (CFR 2023). A tank facility is any tank or tanks that are aboveground, including connected piping, that contain petroleum and are used by an owner or operator at a single location or site, is in secondary containment, and it is used to hold oil. APSA is implemented by CAL FIRE Office of the State Fire Marshal (OSFM). The CUPA regulates businesses storing petroleum in aboveground containers or tanks (California Health & Safety Code, Chapter 6.67, Sections 25270-25270.13).

Local

Solano County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP). The Solano County MJHMP (Solano County 2022) establishes an emergency management organization and assigns functions and tasks consistent with California's Standardized Emergency Management System (SEMS) and the National Incident Management System (NIMS). It provides for the integration and coordination of planning efforts of Solano County Operational Area and serves as the primary planning document for the identification of hazard risk and the provision of financial and technical resources for hazard mitigation.

Solano County Community Wildfire Protection Plan (CWPP). The Solano County CWPP (Solano County 2023) serves multiple purposes in addressing the risk of wildfires and protecting human life and property. It aims to provide a comprehensive assessment of wildfire risk and protection needs across the county, bringing together various

stakeholders involved in wildfire management and suppression. By identifying gaps and deficiencies, the CWPP provides a framework for future planning and implementation of mitigation measures. It also includes a list of actionable projects to mitigate the identified risks.

Solano County Department of Resource Management, Environmental Health Services Division. The Solano County Department of Resource Management, Environmental Health Services Division is the local agency responsible for the enforcement of a variety of hazardous materials management requirements. It is the state-designated CUPA for Solano County. The purpose of the CUPA program is to provide a comprehensive approach to reduce the overlapping and sometimes conflicting requirements of different governmental agencies. The CUPA provides consolidation and consistency in reporting requirements, permit formats, inspection criteria, enforcement standards, and fees for various hazardous materials programs. The CUPA is required by state law to maintain a list of facilities within the county that are known to use, store, or generate hazardous materials or wastes. Facilities that handle hazardous materials or generate hazardous waste must obtain a permit from the CUPA.

Solano County CUPA Operational Area Plan for Emergency Response to Hazardous Materials Incidents. The County of Solano, Department of Resource Management, Environmental Health Services Division 2020 Operational Area Plan for Emergency Response to Hazardous Materials Incidents (Area Plan) has been prepared pursuant to California Health and Safety Code (HSC), Division 20, Chapter 6.95, Section 25503(c) (Solano County 2020). The statute requires administering agencies to establish an area plan for emergency response to a release or threatened release of a hazardous material within its jurisdiction. The Area Plan is the mechanism for implementation of a coordinated response to hazardous materials emergencies in accordance with the Solano County Emergency Management Plan. This Area Plan also references information concerning inventories and spill contingency planning gathered from businesses within Solano County that handle hazardous materials.

Travis Air Force Base Land Use Compatibility Plan. The Travis Air Force Base LUCP (Solano County, 2024a) defines the planning boundary for the airport. Within this boundary, the area is designated into zones with limitations placed on development. The project site is located within zone D of the Travis AFB LUCP, which limits development of structures to below a height of 200 feet.

Solano County General Plan. The Solano County General Plan (Solano County 2008), adopted by the board of supervisors in 2008, as amended, is the guide for both land development and conservation in the unincorporated portions of the county.

The following goals and policies in General Plan Chapter 5, Public Health & Safety, are relevant to this analysis (Solano County 2008).

Goal HS.G-3. Reduce the risk and threat from urban and wildland fire hazards.

Goal HS.G-4. Ensure that Solano County is safe from risks to public health that could result from exposure to hazardous materials.

Goal HS.G-9. Maintain equitable and healthy air quality in Solano County through actions that avoid and minimize health risks from localized pollution sources and regional wildfire smoke.

Policy HS.P-49. Minimize the risks associated with transporting, storing, and using hazardous materials through methods that include careful land use planning and coordination with appropriate federal, State, or County agencies.

Policy HS.I-30. Continue implementation of the Certified Unified Program Agency program, identifying businesses that use, store, or transport hazardous materials in the county. Review, revise, and continue permitting and inspection practices for these businesses. Provide fire departments in the county with a list of such businesses to encourage hazardous material training before an event occurs. Continue to monitor operations of businesses that handle regulated quantities of hazardous materials. Require compliance with measures aimed at reducing associated health and environmental risks.

Policy HS.P-32. Discourage the construction of public facilities in areas of high or very high wildfire risk.

HS.I-17. All new development must comply with fire-resistant landscaping and defensible space requirements. These standards shall meet or exceed Title 14 of the California Code of Regulations (CCR). This specifically includes Division 1.5, Chapter 7, Subchapter 2, Articles 1-5 (commencing with Section 1270, SRA Fire Safe Regulations); and Division 1.5, Chapter 7, Subchapter 3, Article 3 (commencing with Section 1299.01, Fire Hazard Reduction Around Buildings and Structures Regulations). New development shall also comply with the California Public Resource Code Section 4291 (State Defensible Space Requirements), which requires the following:

- Create a defensible space of at least 100 feet around the structure.
- Remove all dead plants, grass, weeds, and other flammable vegetation from the defensible space.
- Remove tree limbs that are within 10 feet of the chimney or stovepipe of the structure.
- Trim tree limbs that are within 6 feet of the ground or within 10 feet of the structure.
- Remove all dead branches, leaves, and other debris from roofs and rain gutters.
- Create horizontal and vertical spacing between trees and shrubs to prevent the spread of fire.
- Space trees at least 10 feet apart from each other.

- Maintain the defensible space throughout the year, not just during fire season.
- Obtain any necessary permits from local fire agencies before conducting any vegetation management activities.
- Provide and maintain access to the property for emergency vehicles.

Hazardous Materials Business Plan. California Health and Safety Code Section 25500, et seq., and the related regulations of California Code of Regulations, title 19, Section 2620 et seq., requires a Hazardous Materials Business Plan (HMBP) to be submitted every year to the California Environmental Reporting System (CERS). The HMBP Program is administered throughout Solano County and its incorporated cities and is used to protect public health, the environment and groundwater from risks or adverse effects associated with the improper storage and handling of hazardous materials.

City of Vacaville General Plan Safety Element. The City of Vacaville General Plan Safety Element provides information about risks in Vacaville due to natural and human-made hazards. It establishes mechanisms to reduce death, injuries, and damage to property, and to address the negative effects of public safety hazards like flooding, fires, and seismic events. The Safety Element addresses the protection of the community from any unreasonable risks associated with the effects of geologic hazards, flooding and dam failure, wildland fires, hazardous materials and waste and climate change related hazards (City of Vacaville, 2023b).

The following policies in the City of Vacaville General Plan Safety Element are relevant to this analysis:

Policy SAF-P5.2. Requires that all development in areas of potential wildfire hazards includes the following:

- Fire breaks adjoining open space areas.
- Adequate access to adjoining open space areas.
- Clearance around structures and energy infrastructure.
- Fire-resistant ground cover.
- Fire-resistant roofing materials.
- Adequate emergency water flow.
- Adequate road dimensions and signage to support the delivery of firefighting services and evacuation.

Policy SAF-P5.4. Require that all development adjacent to open agricultural lands or open space comply with state law regarding defensible open space, even if the agricultural lands are designated for future development.

Policy SAF-P5.7. Requires Fire Department review of all development applications prior to approval.

Policy SAF-P6.2. Cooperate with Solano County on implementation of the Hazardous Waste Management Plan and review development proposals involving hazardous waste facilities to ensure consistency with that plan.

Policy SAF-P6.3. Require industrial uses that rely extensively on the use of hazardous materials to adopt or have in place an acceptable use, storage, disposal, and emergency response program that has been approved by appropriate agencies.

Policy SAF-P6.4. Require adequate separation between areas where hazardous materials are present and sensitive uses such as schools, residences, and public facilities.

Policy SAF-P7.12. Ensure that communication systems used by emergency responders and key City staff have sufficient redundancy and resiliency to meet City needs during and after a hazard event.

City of Vacaville Municipal Code – Title 8 Health and Safety. The City of Vacaville Municipal Code, Title 8 Health and Safety provides the legal framework for addressing health hazards including hazardous materials.

Cumulative

Staff evaluated the projects listed in **Appendix A**, **Table A-1** and **Figure A-1** to determine whether any potential impact of the listed projects could combine with those of the proposed project to cause a potentially significant cumulative impact. The geographic extent for the analysis of cumulative impacts related to hazards, hazardous materials, and hazardous waste is limited to the immediate vicinity surrounding the project because these impacts are limited to the project site and areas in close proximity to the project site. Projects in close proximity to the project site that could have hazards, hazardous materials, or hazardous waste impacts are: Project 1 (I-80 Express Lanes), Project 2 (Vaca Dixon Power Center), Project 9 (Chip Seal 2025: Walnut Road), Project 10 (Chip Seal 2025: Walnut Road), and Project 12 (Orange Drive Apartments and Retail).

The area for cumulative impacts related to wildfire is related to areas that are in or near lands classified as a very high FHSZ, or on land classified by the CPUC as having a high fire threat. As indicated in the project analysis, the proposed project is not in a very high FHSZ, and neither are any of the other nearby cumulative projects.

5.7.2 Environmental Impacts

HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project create a significant hazard to the public or the environment	☐	☒	☐	☐

HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
through the routine transport, use, or disposal of hazardous materials?				
Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	☐	☒	☐	☐
Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☐	☒
Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	☐	☒	☐	☐
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?	☐	☐	☒	☐
Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☒	☐
Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?	☐	☒	☐	☐
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:				
i. Substantially impair an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
ii. Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant concentrations from a wildfire or the uncontrolled spread of a wildfire?	☐	☐	☐	☒
iii. Require the installation or maintenance of associated infrastructure (such as	☐	☐	☐	☒

HAZARDS, HAZARDOUS MATERIALS, AND WILDFIRE	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment?				
iv. Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes?	☐	☐	☐	☒

Note: Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, hazards and hazardous materials and wildfire.

5.7.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, CEC staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

Hazards, Hazardous Materials, and Hazardous Waste. The hazardous materials analyzed include those potentially existing on the site and those that would be used as part of project construction, and operations and maintenance. Potential existing hazards were assessed based on review of information online and in state hazard databases and maps for the project area including:

- List of leaking underground storage tank sites from State Water Resources Control Board (SWRCB) GeoTracker (SWRCB 2025).
- List of hazardous waste and hazardous substances sites from Department of Toxic Substances Control (DTSC) EnviroStor (DTSC 2025).
- List of solid waste disposal sites identified by the SWRCB with waste constituents above hazardous waste levels outside the waste management unit (CalEPA 2025a).
- List of “active” Cease and Desist Orders and Cleanup Abatement Orders (CalEPA 2025b).
- Solano County Multi-Jurisdictional Hazard Mitigation Plan (Solano County 2022).
- Solano County CUPA Operational Area Plan for Emergency Response to Hazardous Materials Incidents (Solano County 2020).
- City of Vacaville Emergency Operations Plan (City of Vacaville 2023a).
- City of Vacaville General Plan Safety Element (City of Vacaville 2023b).
- City of Vacaville Municipal Code (City of Vacaville 2025)

- The hazardous materials section analysis for the Corby Battery Energy Storage System Project (TT 2024c).
- The hazardous materials section analysis for the Corby Battery Energy Storage System Project Update #2, Part 2 (TT 2026e).
- Phase 1 Environmental Site Assessment (TT 2024s).

Some hazardous materials would be used on a short-term basis during construction and decommissioning. Others would be onsite within equipment during operations and stored at offsite locations. Therefore, this analysis examines the choice and amount of chemicals to be used, how the project would use the chemicals, how they would be transported to the facility, and how the project plans to store the materials onsite.

The project is required to provide documentation of the nature of any existing or future releases of hazardous materials that would become hazardous waste from construction or operation. Potential or existing releases of contamination would be influenced by site specific factors including, but not limited to, the concentration of the contaminant in question, the proposed use of the contaminated area, and any potential pathways for worker and general public exposure.

Wildfire. Data on fire hazard potential in the project area and the wildfire history are used to help determine the potential for damaging impacts to occur as a result of a project-caused wildfire or project impacts from future wildfires in the project vicinity.

Additionally, fire suppression information in the project description, and the availability and proximity of water sources for fire containment and suppression were included in the assessment.

To identify and assess potential impacts related to wildfire, CEC staff reviewed publicly available information including the following:

- CAL FIRE – Fire Hazard Severity Zones Maps.
- CAL FIRE – Historical Fire Perimeters Webmap.
- CPUC – High Fire-Threat District Map zones.
- Fire and Resource Assessment Program (FRAP) – fire perimeter GIS data set.
- Solano County Multi-Jurisdictional Hazard Mitigation Plan (Solano County 2022).
- Solano County Emergency Response Plan (Solano County 2024b).
- Solano County Wildfire Community Protection Plan (Solano County 2023).
- City of Vacaville Emergency Operations Plan (City of Vacaville 2023a).
- City of Vacaville General Plan Safety Element (City of Vacaville 2023b).
- Wildfire section analysis for the Corby Battery Energy Storage System Project (TT 2024c).

Thresholds of Significance

A threshold of significance is the line at which a project's environmental impact becomes severe enough that mitigation is required to reduce that impact below the significance line. Impact categories based on the CEQA Environmental Checklist, Appendix G, of the CEQA Guidelines are considered to evaluate if the relevant project impacts are to a degree requiring mitigation.

A threshold of significance may be an identifiable quantitative, qualitative or performance level of a particular environmental effect, and the non-compliance there with means the effect will normally be determined to be significant by the agency.

Impact discussions in Section 5.7.2.2 below, for construction and operation pertain to project jurisdictional and non-jurisdictional components.

5.7.2.2 Direct and Indirect Impacts

a. Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, impacts associated with the routine transport, use, or disposal of hazardous materials/waste during construction would be less than significant with the implementation of Conditions of Certification (COCs) **HAZ-3, HAZ-4, WORKER SAFETY-1**, and **WORKER SAFETY-7**.

The project would use, store, transport, and dispose of hazardous materials used in the construction of the project in accordance with federal and state regulations. Construction would involve the use of hazardous materials, as identified and described in **Table 5.7-1** and **Table 5.7-2**. Hazardous materials used and stored on-site during construction would be securely stored in appropriate containers in compliance with 40 CFR Part 262, 40 CFR section 1910.12, and 8 CCR section 5192.

Construction of the jurisdictional and non-jurisdictional project components would require hazardous materials, such as fuel, lubricants, other oils, and greases, to fuel and service construction equipment. These hazardous materials would be stored at the temporary construction staging areas. These materials would be stored and handled in a manner to prevent accidental release, i.e., consistent with the hazardous materials handling best management practices (BMPs) and other measures contained within the required Stormwater Pollution Prevention Plan (SWPPP) and Hazardous Materials Business Plan (HMBP), which would require them to be stored within secured aboveground containers with secondary containment (TT 2024c).

Construction equipment fuel storage would include approximately 1,300 gallons of diesel fuel stored in temporary stationary tanks with secondary containment. Hazardous waste and electrical waste would be generated in limited quantities and would be transported to appropriate regulated waste handling facilities for disposal or recycling (TT 2024c).

The project would use lithium-ion batteries. The batteries would be delivered to the project site in U.S. Department of Transportation-certified vehicles and in compliance with all applicable requirements of the U.S. Department of Transportation, California Highway Patrol, and California Department of Motor Vehicles. COC **WORKER SAFETY-7** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to require that lithium-ion batteries be shipped from the factory to the project site at a maximum of 30 percent State of Charge (SOC). Batteries would be housed in non-walk-in style battery enclosures stored on racking with no internal open space available for entry (TT 2024c). Non-jurisdictional project components would not handle or store lithium-ion batteries as the Corby BESS would all be within the CEC's jurisdictional project components.

Hazardous waste would be generated during construction of the project. Construction-related hazardous wastes may include hydraulic fluid, fuel, insultation oil, grease, lubricants, paints, solvents and adhesives. However, quantities of these would be limited and they would be handled in accordance with manufacturer's guidelines (TT 2024c).

The project owner would obtain a site-specific Hazardous Waste Identification Number through either the U.S. EPA (federal ID) or the Cal-EPA DTSC (state ID) and hazardous waste generator classification for the project. Whether the project owner obtains a federal ID or a state ID depends on the quantity and type of hazardous waste generated. Hazardous waste generated at the project site would be stored on-site in accordance with accumulation time limits detailed in California Code of Regulations, Title 22, section 66262.16 and 66262.17, before off-site disposal, treatment, or recycling. CEC staff proposes COC **HAZ-3** to ensure that the project has obtained the project's U.S. EPA or Cal-EPA DTSC identification number before the start of construction, reports the number to the Compliance Project Manager (CPM), and notifies the CPM of new or revised numbers.

Hazardous wastes would be accumulated according to the requirements in the California Code of Regulations, title 22, Section 66262.15 for satellite accumulation areas. Hazardous wastes would be collected by a licensed registered hazardous waste hauler using a hazardous waste manifest. Wastes would be transported to permitted hazardous waste management facilities. Copies of manifests, reports, waste analyses, and other documents would be kept on-site and would remain accessible for inspection for at least three years. Employees would be trained in hazardous waste management, including procedures, spill contingencies, and waste minimization.

Hazardous waste would be stored on-site in a satellite accumulation areas or storage areas consistent with regulations and transported by a licensed registered hazardous waste transporter to an authorized treatment, storage, and disposal facility.

A site-specific Construction Site Security Plan would be prepared for the project prior to commencing construction. CEC staff proposes COC **HAZ-4** to require the project owner to create a construction security plan to ensure the protection of these future components of California's electrical infrastructure (the BESS, project substation, and gen-tie) from vandalism or domestic/foreign attacks.

To further reduce the impact of the use, storage and transport of hazardous materials during construction, the project would prepare a Construction Emergency Action Plan, that would include procedures that provide for the safety of surrounding residents, neighboring properties, emergency responders and the environment in the event of an equipment malfunction or failure. Additionally, the project would prepare a Construction Injury and Illness Prevention Program for briefing all construction crews prior to starting work on the project. COC **WORKER SAFETY-1** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to ensure that the Construction Emergency Action Plan and Construction Injury and Illness Prevention Program are implemented.

There would be minimal transport, use, storage and disposal of hazardous materials associated with the PG&E non-jurisdictional project components. PG&E would implement their Good Housekeeping, Activity Specific Erosion and Sediment Control Plan, and their project specific Construction Measures, which includes hazardous materials/waste transport, storage and handling BMPs (PG&E, 2017). The use, storage, transport and disposal of hazardous materials would follow all applicable regulations. In the case of encountering unknown environmental contamination, PG&E would comply with all applicable regulations for ground disturbing activities.

With implementation of COC **HAZ-3, HAZ-4, WORKER SAFETY-1**, and **WORKER SAFETY-7**, the impacts associated with the routine transport, use, or disposal of hazardous materials/waste during construction of the BESS and necessary components, including non-jurisdictional would be less than significant.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, impacts associated with the routine transport, use, and disposal of hazardous materials/waste during project operation would be less than significant with the implementation of COCs **HAZ-1, HAZ-2, HAZ-5** and **WORKER SAFETY-2** for operations.

Operation would involve the use of hazardous materials, as identified in **Table 5.7-1** and **Table 5.7-2**. Hazardous materials used and stored on-site during would be securely stored in appropriate containers or operating equipment in compliance with 40 CFR Part 262, 40 CFR 1910.12, and Calif. Code of Regs., tit. 8, Section 5192.

Hazardous materials used for operations would either be stored offsite at a regional O&M facility or stored onsite in accordance with the manufacturers' specifications and compliant with applicable regulatory requirements, including dedicated storage areas with secondary containment to prevent accidental release. Workers would be trained to engage in safe work practices and to properly identify and handle any hazardous materials onsite (TT 2024a). PG&E would be expected to store any hazardous materials for the offsite components at the Vaca-Dixon Substation in compliance with regulations.

Batteries would continue to be delivered to the project site in U.S. Department of Transportation (DOT)-certified vehicles that would be in compliance with all applicable requirements of the DOT, California Highway Patrol, and California Department of Motor Vehicles. During project operation, the facility would require battery augmentation to maintain project capacity; batteries would be added but not replaced during this planned activity. In addition, lithium-ion battery cells may occasionally be replaced due to defects or loss of efficiencies (TT 2026e).

Project operation and maintenance activities would transport, use, and store a variety of hazardous materials. **Table 5.7-1** presents the hazardous materials that would likely be used and stored on the project site. The project would prepare an SPCC and HMBP prior to operation. The HMBP would list the hazardous materials and their location which ensures that first responders are prepared to respond to any incidents that could occur at the project site. The SPCC would lay out the proper procedures to help prevent a discharge of petroleum products, as well as control a discharge should one occur at the project site. Therefore, CEC staff proposes COC **HAZ-1** which would require the submission of the HMBP and SPCC for the project site to the Solano County Department of Resource Management, Environmental Health Services Division, the CUPA, for the project area, and to the CPM for review and approval. The HMBP would be uploaded annually to the California Environmental Reporting System (CERS).

There is the potential for the project to increase the quantities or change the types of hazardous materials that are used at the project site. New or increased amounts of hazardous materials could require new plan, policy or regulation requirements for the project site. Therefore, CEC staff proposes COC **HAZ-2** which would require the project owner to notify and seek approval from the CPM before changing the quantity of or using a new hazardous material onsite. This would ensure that any new or the change in the amount of hazardous material introduced to the project site would maintain consistency with applicable LORS.

As indicated under the construction phase discussion above, the application indicates a security plan would be prepared. Staff concurs that security elements are needed to ensure the protection of these future components of California's electrical infrastructure (BESS, project substation, and gen-tie) from vandalism or domestic/foreign attacks. Therefore, CEC staff proposes COC **HAZ-5** which would require the project owner to create an operations security plan to ensure a minimum level of security for the project. PG&E would be expected to add the new non-jurisdictional project components to existing security plans at the Vaca-Dixon Substation.

To further reduce the impact of the use, storage and transport of hazardous materials during operations, the project would prepare an Operations Emergency Action Plan, that would include procedures that provide for the safety of surrounding residents, neighboring properties, emergency responders and the environment in the event of an equipment malfunction or failure. Additionally, the project would prepare an Operations Injury and Illness Prevention Program for briefing all construction crews prior to starting work on the project. COC **WORKER SAFETY-2** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to ensure that the Operations Emergency Action Plan and Operations Injury and Illness Prevention Program are implemented. PG&E would be expected to add the new non-jurisdictional project components to the existing Operations Injury and Illness Prevention Program and Operations Emergency Action Plan (or similar PG&E documents) at the Vaca-Dixon Substation, with modification as necessary to comply with regulations. Additionally, PG&E would implement appropriate operations from its Wildfire Mitigation Plan (PG&E 2025) and its Community Wildfire Safety Program, which has resulted in increased safety measures for powerline operations to reduce wildfire risk (PG&E 2024).

With implementation of COCs **HAZ-1, HAZ-2, HAZ-5**, and **WORKER SAFETY-2**, the impacts associated with the routine transport, use, or disposal of hazardous materials/waste during operation of the BESS would be less than significant.

b. Would the project create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, construction would not result in a significant hazard to the public or the environment, with implementation of COCs **HAZ-4, WORKER SAFETY-1**, and **WORKER SAFETY-7**.

As discussed above in CEQA criterion "a," project construction activities would involve the transportation, use and storage of hazardous materials at the project site. Several hazardous materials would be used in construction activities (see **Table 5.7-1**). The improper use and storage of hazardous materials or other accidents could lead to hazardous materials leaks and spills or fires. However, most spills and leaks would be limited and easily cleaned up with spill kits due to the small quantities involved. In addition, during construction, hazardous materials would use dedicated storage areas with secondary containment to lower the risk of a release to the environment.

Trucks would transport batteries to the site, creating the potential for hazardous materials accidents during transport. Such accidents can have serious impacts to the highways. In 2024, I-15 in southern California was closed in both directions for 40 hours due to a lithium-ion battery fire that started when a truck transporting lithium-ion

batteries overturned, which then caused the batteries to catch fire (VV Daily Press 2024). COC **WORKER SAFETY-7** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to reduce the potential BESS fires (during transport to and from the site), by requiring lithium-ion batteries be shipped from the factory to the project site at a maximum of 30 percent State of Charge (SOC). This measure would reduce the likelihood of a thermal runaway incident and reduce the energy of a fire if one occurred during transportation.

Staff reviewed the project details for the routine transport, use, and disposal of hazardous materials during construction, which are listed above in criterion "a," that would be developed to reduce the potential for incidents involving hazardous materials and concluded that implementation would be adequate to ensure that hazardous materials handling would be compliant with applicable LORS. COC **WORKER SAFETY-1** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to reduce injuries and prepare for emergencies from accidents. COC **HAZ-4** would enhance site security during construction, also reducing the potential for accidents on-site. Worker safety programs and procedures to protect workers from exposure to hazardous materials and waste are included in **Section 4.4, Worker Safety and Fire Protection**.

The application included a Fire Prevention Plan to be prepared and implemented by the project owner during construction to ensure the safety of workers and the public during construction activities for the project. COC **WORKER SAFETY-1** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to ensure that the Fire Prevention Plan is implemented for construction.

For project non-jurisdictional project components, PG&E would implement their Good Housekeeping, Activity Specific Erosion and Sediment Control Plan, and their project specific Construction Measures, which includes hazardous materials/waste transport, storage and handling BMPs (PG&E 2017). The use, storage, transport and disposal of hazardous materials would follow all applicable regulations.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, operations would not result in a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions, with implementation of COCs **HAZ-5, HAZ-9, PH-2, WORKER SAFETY-2, WORKER SAFETY-7** and **WORKER SAFETY-8**.

As discussed above in criterion "a," project operations would involve the transportation, use and storage of hazardous materials at the project site. Several hazardous materials would be used during operations (see **Table 5.7-1**). The improper use and storage of hazardous materials could lead to leaks and spills or fires. However, most spills and leaks would be limited and easily cleaned up with spill kits due to the small quantities involved. The project would include operations and maintenance (O&M) equipment that

would be stored in up to eight Conex storage containers, each approximately 10 feet by 20 feet in size placed in open areas within the fenced BESS yard. Enclosures used to store hazardous materials would be inspected regularly for any signs of failure or leakage. Other hazardous materials used for operations would either be stored offsite at a regional O&M facility or stored onsite in accordance with the manufacturers' specifications and compliant with applicable regulatory requirements, including dedicated storage areas with secondary containment to prevent accidental release. COC **WORKER SAFETY-7** and **WORKER SAFETY-8** are proposed in **Section 4.4, Worker Safety and Fire Protection** to ensure various fire safety measures are included in the project. **WORKER SAFETY-7** measures include fire and heat sensors for early detection of BESS facility malfunctions, gate and emergency access requirements, Command and Control Center site requirements, and adequate water supply for the fire suppression systems. **WORKER SAFETY-8** requires for annual Dixon Fire Department (DFD) training for a BESS fire. COCs **WORKER SAFETY-7** and **WORKER SAFETY-8** would mitigate the impact of potential BESS fires at the project site to a less-than-significant level.

Staff reviewed the project details for transport, use, and disposal of hazardous materials/waste during operation, which are listed above in criterion "a" that would be developed to reduce the potential for incidents involving hazardous materials and concluded that implementation would generally be adequate to ensure that hazardous materials handling would be compliant with LORS). Therefore, hazardous materials would be transported, used, and stored in a manner compliant with LORS. Additionally, COC **WORKER SAFETY-2** would include plans to reduce injuries and prepare for emergencies. COCs **WORKER SAFETY-7** and **WORKER SAFETY-8** include several actions to reduce the effects of accidents related to the BESS and require DFD training for BESS fires. Staff proposed COC **HAZ-5** would enhance site security during operations, also reducing the potential for accidents on-site. Worker safety programs and procedures to protect workers from exposure to hazardous materials and waste are included in **Section 4.4, Worker Safety and Fire Protection**.

The BESS would have the potential for upset and accident conditions due to the large volume of lithium-ion batteries that could create the risk of fires due to BESS failure incidents leading to thermal runaway and fires from other infrastructure (susceptible to failure) related to the storage and dispatch of the large quantity of stored energy in the BESS. Thermal runaway is a process in which the lithium-ion cell enters an uncontrollable, self-heating state and can emit toxic gases such as hydrogen chloride, hydrogen fluoride, hydrogen cyanide, and benzene along with flammable/explosive gases including hydrogen, methane, propane, ethylene, and others. These flammable gases could potentially lead to a fire or explosion within the BESS. Due to the potential for fire and explosion, staff conclude that the project's BESS would present a significant risk that should be mitigated. **WORKER SAFETY-7** and **WORKER SAFETY-8** would reduce the risk of fire to less than significant. For more information refer to **Section 4.4, Worker Safety and Fire Protection**.

In the rare case of a thermal runaway or fire incident at a BESS, there could be smoke that could last for many hours or longer, even if the accident is limited to a single container. **Section 5.10, Public Health** and **Appendix D, Dispersion and Frequency Analysis**, provide detailed analysis of air quality and public health impacts during a BESS thermal runaway and fire event for the project.

Several BESS fire incidents have occurred at installations where the soil, water and air were required to be sampled during and after the incident to ensure the safety of the public. Real-time air sampling information could be important for first responders to determine if a shelter in place or evacuation order would be necessary. To date, the water and air sampling conducted at other BESS fire incidents has found that the constituents did not pose a significant concern to public health (NYSERDA 2023). However, CEC staff have determined that having this real-time information could be useful for first responders and public health. Therefore, CEC staff recommends COC **PH-2** that would require air sampling during a BESS fire incident.

During a BESS fire event, water would be available for the DFD to use to potentially cool the surrounding containers or could be used on the container on fire at the discretion of the DFD. The water used for firefighting activities may come into contact with the smoke plume from the BESS fire, which could result in the water mixing with hazardous materials. Additionally, particulate matter may settle out of the plume onto the surface soils, resulting in hazardous material concentrations in surface and shallow soils. Therefore, CEC staff proposes COC **HAZ-9** that would require the project owner to develop a soil and water sampling plan. The plan would ensure that water quality testing would be conducted prior to any disposal of water used for an incident. Additionally, soil, surface water and groundwater (as applicable) sampling would ensure that soil and water with hazardous constituent concentrations above applicable thresholds are properly remediated. COC **WORKER SAFETY-2** is also proposed in **Section 4.4, Worker Safety and Fire Protection**, that requires a Fire Prevention Plan for operations.

With implementation of the proposed COCs **HAZ-5, HAZ-9, PH-2, WORKER SAFETY-2, WORKER SAFETY-7** and **WORKER SAFETY-8** for operations, the impacts associated with hazardous materials releases from reasonably foreseeable upset and accident conditions of the BESS would be less than significant.

c. Would the project emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

Construction and Operation

No Impact. Based on the analysis below, project construction and operation would not result in hazardous materials impacts to existing or proposed schools.

The nearest schools to the project site are the Academy of 21st Century Learning approximately 1.6 miles west of the project site and approximately 1.3 miles west-southwest of the gen-tie line (offsite components), Cooper Elementary School approximately 3 miles southwest of the project site, Edwin Markham Elementary School approximately 4 miles west-southwest of the project site and 3.8 miles from the gen-tie line, and Browns Elementary School approximately 4miles west-southwest from the project site and 3.8 miles from the gen-tie line.

There are no schools within a 0.25-mile radius of the jurisdictional or non-jurisdictional project components. Therefore, there would be no impact to existing or proposed schools.

d. Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, project construction and operation would not be on a listed hazardous materials site. To mitigate the potential impacts from unknown environmental contamination, CEC staff proposes COCs **HAZ-6, HAZ-7, HAZ-8** and **HAZ-11** to require a Soils Sampling and Analysis Plan (SAP) and Phase II ESA, a Soils Management Plan (SMP) and a professional engineer or geologist be available for consultation if contamination is discovered during ground disturbing activities.

The DTSC and SWRCB compile and update lists of hazardous material sites pursuant to Government Code section 65962.5. The project site is not included on the databases maintained by the DTSC's Envirostor (DTSC, 2025) or the SWRCB's Geotracker (SWRCB, 2025).

Further examination using the DTSC's and SWRCB's databases show that there are no sites on the Cortese list within 1,000 feet of the project site (CalEPA, 2025b). The closest listing on the Cortese list is located at 5057 & 5065 Quin Road, approximately 1.2 miles west of the project site. The site is listed as Completed – Case Closed as of 4/23/2008. The project would not be developed on a site identified on a list compiled pursuant to Government Code section 65962.5., therefore it would not present a significant hazard to public health or the environment. Therefore, there is no impact related to Government Code section 65962.5.

Unknown Environmental Contamination. In addition to the site not appearing on the database of hazardous materials sites, the Phase I ESA completed in July, 2024, concluded that no stressed vegetation, areas of staining, or other evidence of hazardous substance releases were observed at the subject property, and Recognized Environmental Conditions (RECs) were not identified in association with the project site.

However, the Phase I concluded that historic agricultural use of the subject property may have resulted in the presence of residual agrichemical constituents, including organochlorinated compounds and metals, in surficial soils. Given the proposed commercial/industrial use of the subject property, concentrations of the residual agrichemical constituents are considered likely to be below applicable risk-based regulatory levels; but their potential presence should be considered when evaluating potential risks (TT 2024s). To better understand the existing, pre-project baseline risks of agrichemical constituents in the soil, CEC staff proposes COC **HAZ-11**, that requires preparation of a Sampling Analysis Plan (SAP) and completion of a Phase II ESA for the project site and offsite components, including the gen-tie line, prior to the start of any ground disturbing activities.

To mitigate for soil contamination discovered by the Phase II ESA, or unknown environmental contamination discovered during future construction and operation activities, CEC staff proposes COC **HAZ-6** that requires preparation of a Soil Management Plan (SMP) prior to the start of ground disturbing activities. The SMP would provide procedures and protocols for the proper management of unknown impacts to soil or undocumented subsurface features potentially encountered at the project site during grading and construction activities. The information provided in the SMP would be used to address proper handling, assessment, and disposal of any impacted soil or subsurface features that are encountered during grading. Soil that would be transported offsite must be adequately characterized and disposed of at a facility that is permitted and approved by the disposal contractor to receive such material. Likewise, any soil imported to the property must be either from a virgin quarry or certified as determined by analysis to be "clean" in accordance with applicable state LORS prior to arriving at the project site. CEC staff recognize that ground disturbing activities could have the potential to encounter impacted groundwater or soil. Therefore, CEC staff proposes COC **HAZ-6** that would require the submission of a SMP to the Solano County Department of Resource Management, Environmental Health Services Division (CUPA), for review and comment, and to the CPM for review and approval prior to the start of any ground disturbing activities.

A professional engineer or professional geologist with sufficient experience in hazardous waste management would have the requisite expertise to determine whether additional investigations are needed to identify the extent of contamination and to ensure proper handling and disposal contaminated soil and groundwater. Therefore, CEC staff proposes COC **HAZ-7** that would require that an experienced and qualified professional engineer or professional geologist would be available for consultation if contamination is discovered during ground disturbing activities. The resume of the professional engineer or professional geologist shall reflect experience in remedial investigations and feasibility studies. If seemingly contaminated soil or groundwater is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities (as evidenced by discoloration, odor, detection by handheld instruments, or other signs), COC **HAZ-8** would require the professional engineer or geologist to inspect the site, determine what would be required to characterize the nature and

extent of contamination, and provide a report to representatives of the Solano County Department of Resource Management, Environmental Health Services Division (CUPA) and the CPM on findings and the recommended course of action. Related activities would specifically include soil removal, dust suppression, and worker exposure prevention by means of wearing personal protective equipment. Any contaminated soils or groundwater identified would be removed and disposed of or treated according to the appropriate local, state, and federal regulations under the oversight of the agency taking lead jurisdiction.

For non-jurisdictional project components, PG&E would comply with all applicable regulations for ground disturbing activities in the event of encountering unknown environmental contamination. PG&E would implement their Good Housekeeping, Activity Specific Erosion and Sediment Control Plan, and their project specific Construction Measures, which includes hazardous materials/waste transport, storage and handling BMPs (PG&E, 2017).

Any contaminated soils or groundwater identified would be removed and disposed of or treated according to the appropriate local, state, and federal regulations. CEC staff proposes COCs **HAZ-6, HAZ-7, HAZ-8**, and **HAZ-11** for construction activities to ensure that any impacts from unknown environmental contamination would be less than significant.

e. For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area?

Construction and Operation

Less Than Significant Impact. Based on the analysis below, the project is not within two miles of a public airport or public use airports and project construction and operation would have a less than significant impact related to airport safety hazards or noise for people working in the project area.

There are no public or private airports within two miles of the project. The nearest airport is the Nut Tree Airport which is approximately 3 miles to the west-southwest of the project site and 2.8 miles west-southwest of the gen-tie line. Given the distance to the Nut Tree Airport, on-site construction workers or maintenance staff would not be exposed to excessive airport noise levels or a safety hazard.

The project site, including project jurisdictional and non-jurisdictional components, is approximately 7.2 miles north of Travis Air Force Base and is within the AIA of the Travis AFB LUCP, Zone D (Solano County 2024a). According to the Travis AFB LUCP, the only prohibited uses are Hazards to Flights, which include physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Development within this zone requires Airport Land Use Commission (ALUC)

review for objects greater than 200 feet above ground level. The project would not include any structures taller than 200 feet and therefore does not require ALUC review. The project does not need ALUC review for any of the other development conditions for Zone D, such as creating glare, attracting birds or otherwise interfering with the safety of aircraft operations (TT 2024c).

Given the distance to the closest airport (The Nut Tree Airport) and the location of the project within the Travis Air Force Base AIA, on-site construction workers or maintenance staff would not be exposed to excessive airport noise levels or a safety hazard. Therefore, there would be less than significant impact related to airport safety hazards or noise for people working in the project area.

f. Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?

Construction and Operation

Less Than Significant Impact. Based on the analysis below the project would have a less than significant impact on any adopted emergency response plans or emergency evacuation plans.

The project would not impair implementation of or physically interfere with the Solano County Emergency Operations Plan (EOP), the Solano County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), the Solano County Community Wildfire Protection Plan (CWPP), or the City of Vacaville EOP.

The Solano County General Plan identifies the primary emergency access and evacuation routes as including I-80 (traversing the county from southwest to northeast); I-680 between Benicia and Cordelia; I-505 north from Vacaville; SR-12 east to west across the length of the county; SR-37 west from Vallejo; SR-84 and SR-113 (traversing the county north to south in the eastern region of the county); and other local roadways that connect to these primary evacuation routes (Solano County 2008). There is no adopted evacuation plan specifically associated with the project area. The primary roadway providing access to and from the project site is Kilkenny Road, a two-lane rural roadway that extends eastward from I-80. This roadway is not listed as a designated evacuation route by Solano County but would serve as the main ingress/egress for workers, emergency personnel, and potential evacuation, if needed.

Project construction and operation, including jurisdictional and non-jurisdictional project components, would not alter or impair any of the existing road networks. The project would require a temporary road closure along Kilkenny Road to allow for construction of the underground portion of the gen-tie line under either Underground Route Option #1 or Underground Route Option #2. However, the project would secure the necessary encroachment permits to allow for this temporary road closure and would coordinate with Solano County to ensure that this temporary road closure would not impair

emergency response or evacuation in the area. Temporary closure of this roadway would still allow for local access and would not isolate areas on either side of the road closure. Upon completion of this portion of the underground gen-tie line, the existing road network would be operable similar to existing conditions (TT 2024c).

The project would not impair or physically interfere with Solano County EOP, the Solano County MJHMP, the Solano County CWPP, or the City of Vacaville City EOP. Additionally, the project owner would ensure that temporary road closures associated with construction would not impair emergency response or evacuation in the area. Therefore, the project would have a less than significant impact on any adopted emergency response plans or evacuation plans.

g. Would the project expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?

Less Than Significant with Mitigation Incorporated. The project site is a flat agricultural area that has no history of wildland fires and COCs **WORKER SAFETY-1, WORKER SAFETY-2, WATER-1, WATER-2**, and **HAZ-10** have been included to reduce the potential for fires from project construction and operation.

Construction and Operation

The project site is in an area of predominantly agricultural land and rural residential land uses and no nearby forested areas. As indicated in **Figure 5.7-2**, there is no history of wildfires near the project site, including both the jurisdictional and non-jurisdictional project components. The areas surrounding the project site have sparse vegetation for fuel loading. The project site is within an unzoned LRA (see **Figure 5.7-1**). The nearest SRA, classified as high FHSZ, is approximately 4.8 miles west of the project site (CAL FIRE 2025b).

The Corby BESS would be served primarily by the Dixon Fire Department (DFD), which works under direct contract and partnership with the Dixon Fire Protection District (DFPD). The DFD provides fire suppression, hazardous materials, and emergency medical services to the area. DFD is backed by strong regional mutual aid agreements from Vacaville, Davis, UC Davis, and Solano County Fire Departments. The DFD is fully staffed, maintains comprehensive apparatus, and has coordinated directly with NextEra and the CEC to define access, detection, water supply, and training requirements. Station 81 would serve as the primary “official” responding station, with an estimated 13-minute response time. However, under mutual aid, Vacaville Fire Department Station 72 would be first on the scene with a response time of approximately 7 – 8 minutes.

There would be an increase in human activity and potential ignition sources associated with the BESS and other electrical equipment including both jurisdictional and non-jurisdictional project components. The predominant fire hazard from project construction would involve the use of vehicles and equipment which could ignite dry vegetation and result in a fire, particularly during the drier, warmer conditions of

summer and fall. Construction activities that could result in sparks, such as welding or grading, would have potential to result in an ignition. All battery components for the BESS would be installed on concrete pads and contained within an enclosure to minimize the potential for sparks or ignition. Fire detection measures would be incorporated in the project design in accordance with NFPA safety standards.

The project would include components that would introduce potential ignition sources. These components would include the BESS and associated infrastructure (e.g., access roads, powerlines (including the gen-tie line), transformers, inverters, substations, maintenance vehicles, gas/electric-powered machinery, and batteries. The project would also include landscaping along the northern and eastern boundaries of the project site, which would consist of drought-tolerant and native vegetation (TT 2024c).

The applicant proposes to prepare and implement a Construction Fire Prevention Plan that would further reduce construction-related risks of wildfire ignition. It would do this by providing fire protections, identifying known fire hazards, and outlining procedures for fire safeguards for project construction activities. COC **WORKER SAFETY-1** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to require the project owner to prepare a Construction Fire Prevention Plan and ensure that the plan would be implemented during construction.

The applicant proposes to prepare and implement an Operations & Maintenance (O&M) Fire Prevention Plan that would further reduce operations-related risks of wildfire ignition by providing fire protections, identifying known fire hazards, and outlining procedures for fire safeguards for project O&M activities. The project owner would coordinate with the local fire department and follow applicable detection and suppression requirements in the local California Fire Code (see **Section 4.4, Worker Safety and Fire Protection**, for more fire protection information). COC **WORKER SAFETY-2** is proposed in **Section 4.4, Worker Safety and Fire Protection**, to require the project owner to prepare an O&M Fire Prevention Plan and ensure that the plan is implemented during operations.

The topography of the project site and adjacent land, including locations of off-site project components, is relatively flat. Flat topography generally results in lower risk of downslope flooding or landslides as a result of runoff from post-fire slope instability or drainage changes. The total graded area for the project site and offsite components including the gen-tie, construction areas, laydown areas, and construction buffers, would total approximately 67.3 acres (TT 2024c). Storm water discharge during construction would be managed according to the project Storm Water Pollution Prevention Plan (SWPPP). The implementation of COC **WATER-1** (see **Section 5.16, Water Resources**) would ensure that the SWPPP would be implemented. Additionally, the owner would implement an Operations Drainage, Erosion and Sediment Control Plan (DESCP) that addresses all project elements of stormwater management during project operations. Implementation of COC **WATER-2** (see **Section 5.16, Water Resources**) would ensure that the DESCP is followed. The proposed onsite stormwater control measures would be designed to

maintain stormwater discharge at or below the current rates. The project would therefore not be expected to contribute to a flooding hazard onsite or offsite, including post-wildfire instability.

To minimize fire risk, vegetation or agricultural products on and around the project boundary and along the gen-tie corridor and associated transmission towers would be actively managed by the project owner or its affiliates during the construction and operation phases of the project. Vegetation would be either limited in height or removed (TT 2024c). CEC staff proposes COC **HAZ-10** that would require that the project owner prepare an annual vegetation management inspection report. The project owner would be required to provide that report to the DFPD for review and comment and provide the report along with comments and any corrective actions taken to the CPM.

The project impact from wildland fires would be less than significant with implementation of COCs **WORKER SAFETY-1, WORKER SAFETY-2, WATER-1, WATER-2**, and **HAZ-10**.

h. If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:

Construction and Operation

No Impact. The project site and the off-site components of the project are not located in or near an SRA and not in or near lands classified as a very high fire hazard severity zone (FHSZ). The project is located within an unzoned LRA. The nearest SRA, classified as high FHSZ, is approximately 4.8 miles west of the project site (CAL FIRE 2025b). Additionally, the project is not located on land classified as having a fire threat by the CPUC. The nearest CPUC High Fire Thread District, classified as Tier 2, is located approximately 4.1 miles west of the project site (CPUC 2025). Therefore, Appendix G sections (h)(i-iv) do not apply to the project. Wildfire risk is discussed further in criterion "g," above.

5.7.2.3 Cumulative Impacts

Construction and Operation

Less Than Significant with Mitigation Incorporated. The cumulative effect of hazards such as emergency evacuation, the lithium-ion BESS, the transportation, use, and storage of hazardous materials and the generation and haul away of hazardous waste would be limited to the project site areas in close proximity to the project site. Five projects in close proximity to the project site that could have hazards, hazardous materials, or hazardous waste impacts are: Project 1 (I-80 Express Lanes), Project 2 (Vaca Dixon Power Center), Project 9 (Chip Seal 2025: Walnut Road), Project 10 (Chip Seal 2025: Walnut Road), and Project 12 (Orange Drive Apartments and Retail). COCs **HAZ-1, HAZ-4** and **HAZ-5** would mitigate project specific effects related to hazardous materials, and COCs **WORKER SAFETY-1** and **WORKER**

SAFETY-2 would mitigate site specific effects related to emergency actions and response. Therefore, CEC staff have concluded that the COCs are sufficient to reduce impacts, and the proposed project would not contribute to a cumulatively considerable impact related to hazardous materials.

Neither the proposed project nor the five projects identified in close proximity in the cumulative setting of this document are in high wildfire risk areas (lands classified as a very high FHSZ or classified by the CPUC as having a fire threat), nor in an area with any recent historic wildfires. Therefore, there would be no cumulative impact related to wildfire risks.

Since the proposed project and nearby projects are not within a very high FHSZ and with the inclusion of COCs **WORKER SAFEY-1, WORKER SAFETY-2, WORKER SAFETY-7**, and **WORKER SAFETY-8** that would mitigate project specific effects related to fire protection and potential BESS fire-related incidents, the proposed project would not contribute to a cumulatively considerable impact on wildfires.

5.7.3 Project Conformance with Applicable LORS

Table 5.7-4 and **Table 5.7-5** are CEC staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the project would conform with LORS. As shown in these tables, CEC staff concludes that with implementation of specific COCs, the proposed project would conform with all applicable LORS. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE

Applicable LORS	Conformance and Basis For Determination
Federal	
Section 302, EPCRA (Public Law 99-499 42 USC 110222) and Hazardous Chemical Reporting: Community Right-to-Know (40 CFR 370). Requires one-time notification if extremely hazardous substances (EHS) are stored in excess of Threshold Planning Quantities (TPQ)s.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An HMBP would be prepared for the project and submitted to Solano County Department of Resource Management, Environmental Health Services Division (CUPA), and uploaded to CERS.
Section 304, EPCRA (Public Law 99-499, 42 USC 11002) and Emergency Planning and Notification (40 CFR 355). Requires notification when there is a release of hazardous material in excess of its Reportable Quantity (RQ).	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. Any releases of hazardous materials at the project facility in excess of its RQ would follow the notification procedures described in the project HMBP.
Section 311, EPCRA (Public Law 99-499, 42 USC 11021) and Hazardous Chemical Reporting: Community Right-to-Know (40 CFR 370). Requires that SDSs for all hazardous materials or a list of all hazardous materials be submitted to the State Emergency Response Commission Local	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would include a list of hazardous materials for submission to the Solano County Department of Resource Management,

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE

Applicable LORS	Conformance and Basis For Determination
Emergency Planning Commission (LEPC), and Solano County Department of Resource Management, Environmental Health Services Division (CUPA).	Environmental Health Services Division (CUPA) and uploaded to CERS.
Section 313, EPCRA (Public Law 99-499, 42 USC 11023) and Toxic Chemical Release Reporting: Community Right-to-Know (40 CFR 372). Requires annual reporting of releases of hazardous materials.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. Any releases of hazardous materials at the project facility would follow the notification procedures described in the HMBP.
Section 112, CAA Amendments (Public Law 101-549, 42 USC 7412) and Chemical Accident Prevention Provisions. Requires facilities that store a regulated hazardous material at a quantity greater than the Threshold Quantity (TQ) to develop an RMP.	**Yes.** An RMP is not required because no regulated hazardous material would be stored at a quantity greater than the TQ.
Section 311, CWA (Public Law 92-500, 33 USC 1251 et seq.) and Oil Pollution Prevention (40 CFR 112). Requires preparation of an SPCC plan if the total oil and petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons or if the oil or oil products stored in USTs exceeds 42,000 gallons.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An SPCC plan would be prepared for the project facility if cumulative storage of oil and oil products on-site is greater than 1,320 gallons or storage of oil and oil products in USTs is greater than 42,000 gallons.
Hazardous Waste Operations and Emergency Response (49 CFR Section 1910.12). Specifies the operational and response requirements related to the use, generations, and storage of hazardous materials.	**Yes.** COC **HAZ-1** requires the owner to prepare the HMBP and SPCC Plan prior to the start of operations. The HMBP would include information regarding the secure storage of hazardous waste and materials**.** COCs **HAZ-4** and **HAZ-5** require the owner to prepare site-specific security plans for construction and operation.
U.S. Department of Transportation Regulations, 49 CFR 171-177. Governs the transportation of hazardous materials, including the marking of transportation vehicles.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would describe transportation requirements for hazardous materials stored at the project facility.
Hazardous Waste Operations and Emergency Response (49 CFR Section 1910.12). Specifies the operational and response requirements related to the use, generations, and storage of hazardous materials.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would describe operational and emergency response requirements related to the use, generation, and secure storage of hazardous materials.
Resource Conservation and Recovery Act (RCRA), Title 42, Chapter 82. Regulates transportation, treatment, storage, and disposal of hazardous waste.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would establish procedures related to the transportation, treatment, storage, and disposal of hazardous waste.
Toxic Substances Control Act (TSCA), Title 15, Chapter 53. The TSCA addresses the production,	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE

Applicable LORS	Conformance and Basis For Determination
importation, use, and disposal of specific chemicals, including PCBs.	operations. The HMBP would establish procedures for the use and disposal of hazardous materials including PCBs.
Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Title 42, Chapter 103. Provides procedures to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. See impact discussion criterion "b."
State	
CCR, Title 8, Section 339; Section 3200 et seq., Section 5139 et seq. and Section 5160 et seq. Lists hazardous chemicals under the Hazardous Substance Information and Training Act; addresses control of hazardous substances; and addresses hot, flammable, poisonous, corrosive, and irritant substances.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The HMBP would describe hazardous material handling requirements related to the control of hazardous substances, including hot, flammable, poisonous, corrosive, and irritant substances.
Health and Safety Code, Section 25500 et seq. (HMBP). Requires preparation of an HMBP if hazardous materials are handled or stored in excess of threshold quantities.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An HMBP would be prepared for the project and submitted to Solano County Department of Resource Management, Environmental Health Services Division (CUPA) and uploaded to CERS.
Health and Safety Code, Section 25531 through 25543.4 (CalARP). Requires registration with local CUPA or lead agency and preparation of RMP if regulated (extremely hazardous) substances are handled or stored in excess of TPQs.	**Yes.** A RMP is not required because no regulated hazardous material would be stored at a quantity greater than the TPQ.
Occupational Safety and Health Act (19 CFR 1910.119). For chemicals listed above thresholds, requires a process safety management plan for preventing or minimizing the consequences of catastrophic releases of toxic, reactive, flammable, or explosive chemicals. These releases may result in toxic, fire, or explosive hazards.	**Yes.** A process safety management plan (PSM) is not required because the project would not use chemicals that trigger a PSM plan.
Health and Safety Code, Section 25270.13 (Aboveground Petroleum Storage Act). Requires preparation of an SPCC plan if oil is stored in a single AST with capacity greater than 660 gallons or if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is greater than 1,320 gallons.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. An SPCC plan would be prepared for the project and implemented if cumulative storage of oil and oil products on-site is greater than 1,320 gallons.
Health and Safety Code, Section 25249.5 through 25249.13 (Safe Drinking Water and Toxics Enforcement Act) (Proposition 65). Requires warning to persons exposed to a list of carcinogenic and reproductive toxins and protection of drinking water from the same toxins.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would include details about the storage and transportation of hazardous materials and waste. The project would comply with all local, state, and federal regulations for

TABLE 5.7-4 CONFORMANCE WITH LORS APPLICABLE TO HAZARDS AND HAZARDOUS MATERIALS/WASTE

Applicable LORS	Conformance and Basis For Determination
	hazardous waste handling, storage, and transportation.
CVC Section 32100.5. Establishes the procedures for the state to determine transportation corridors for materials that may pose an inhalation hazard.	**Yes.** Transportation of inhalation hazard chemicals would follow designated routes.
CVC Section 32000 – 32053. Regulates the transportation of hazardous materials, including licensing and notification of hauling routes.	**Yes.** Transportation of hazardous materials to and from the project facility would follow all licensing and notification requirements.
Health and Safety Code, Section 25280 through 25299 (Underground Storage of Hazardous Substances). Regulates the construction, maintenance, testing, and use of USTs for the storage of hazardous Substances.	**Yes.** The project facility is not expected to have any USTs therefore a UST monitoring plan is not required for the facility.
CCR, Title 22 (Hazardous Waste Management). Establishes standards applicable to generators and transporters of hazardous waste.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project HMBP would include details regarding hazardous waste generation and transportation. Includes manifest recordkeeping requirements.
Health and Safety Code, Hazardous Materials Release Response Plans and Inventory Law, Division 20, Chapter 6.95. Regulates the release or accidental release of hazardous materials.	**Yes.** See impact discussion criterion "b."
California Code of Regulations, Title 24 (California Fire Code). Requires the preparation of a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) or an HMBP that includes the required information.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project facility would prepare an HMBP that would include details that satisfy the requirements of the HMMP and HMIS.
Local	
Solano County Operational Area Plan for Emergency Response to Hazard Materials Incidents establishes a plan for emergency response to a release or threatened release of a hazardous material within its jurisdiction.	**Yes.** The project would comply with all local, state, and federal regulations for hazardous materials handling, storage, and transportation and emergency response.
Solano County Multi-Jurisdictional Hazard Mitigation Plan.	**Yes.** All project components would conform with Solano County Multi-Jurisdictional Hazard Mitigation Plan.
The City of Vacaville General Plan Safety Element Requires the fire department to review emergency communication systems and fire safety designs for developments involving hazardous materials, and review and approve the HMBP for the development.	**Yes.** All project components would conform with City of Vacaville General Plan Safety Element.
The City of Vacaville Municipal Code, Title 8 Health and Safety provides the legal framework for addressing health hazards including hazardous materials.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. All project components would conform with City of Vacaville Municipal Code, Title 8 Health and Safety.

TABLE 5.7-5 CONFORMANCE WITH LORS APPLICABLE TO WILDFIRE	
Applicable LORS	**Conformance and Basis For Determination**
Federal	
National Fire Protection Association Codes, Standards, Practices, and Guides. Provides design, installation, and operation standards regarding fire safety.	**Yes.** The NFPA Standards required by the Project, including NFPA 855, Standard for the Installation of Stationary Energy Storage Systems, which is the standard for the testing, design, installation, operation, and removal of battery energy storage systems and components, provide the basis for state regulation (CFC Chapter 12 Section 1207), which the project would comply with.
North American Electric Reliability Corporation; Institute of Electrical and Electronics Engineers; National Electrical Safety Code	**Yes.** All electrical components, most notably overhead powerlines, associated with the proposed project (including the gen-tie line), would comply with the requirements of the National Electrical Safety Code, most notably the vegetation management requirements.
CGC Sections 51175 through 51189, Section 51182; CCR Title 14, Division 1.5, Chapter 7, Subchapter 3; PRC Sections 4290-4293; PUC 8386, General Orders and Rules. Regulate defensible space, vegetation management around powerlines, and fire hazard severity zones.	**Yes.** COCs **WORKER SAFETY-1** and **WORKER SAFETY-2** require the owner to prepare construction and operation fire prevention plans that would include details regarding defensible space and vegetation management.
State	
Part 2 of CCR Title 24, California Building Code. Provides construction standards.	**Yes.** Project construction would comply with the CBC through compliance with the Solano County Code of Ordinances.
CCR, Title 8 section 1920, et seq. Regulations for fire protection systems.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**.
Requirements for fire protection. CCR Title 8, sections 6150, 6151, 6165, 6170, 6175, 6183, 6184	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**.
CFC, Title 24. Establishes best practices for fire safety and prevention. Requires the preparation of a Hazardous Materials Management Plan (HMMP) and Hazardous Materials Inventory Statement (HMIS) or a Hazardous Materials Business Plan (HMBP) that includes the required information.	**Yes.** COC **HAZ-1** requires the owner to prepare an HMBP and SPCC Plan prior to the start of operations. The project facility would prepare an HMBP that would include details that satisfy the requirements of the HMMP and HMIS.
CCR, Title 24, Chapter 1207. Outlines requirements for design, construction, operation, and decommissioning standards; permits, construction documents, hazard mitigation analysis, and fire testing, suppression, and remediation for stationary and mobile electrical energy storage systems.	**Yes.** COC **WORKER SAFETY-6** requires the project owner to comply with the applicable provisions of NFPA 855 (standard for the Installation of Stationary Energy Storage Systems) as minimum level of safety for the BESS. Also, COC **WORKER SAFETY-6** requires the project owner to comply with the applicable provisions of NFPA 850 (recommended Practice for Fire Protection for Electric Generating Plants and High Voltage Direct Current Converter Stations) as the minimum level of fire protection. The BESS would be designed to

TABLE 5.7-5 CONFORMANCE WITH LORS APPLICABLE TO WILDFIRE	
Applicable LORS	**Conformance and Basis For Determination**
	comply with the requirements set forth in CCR, Title 24, Chapter 1207.
California Public Resources Code, Section 4427, Section 4428, and Section 4431. Outlines fire safety and wildfire protection standards in conjunction with building, construction, and development in SRAs.	**Yes.** A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**. The project would include preparation and implementation of a Fire Prevention Plan during construction and O&M activities.
Part 9 of CCR Title 24, California Fire Code. Establishes requirements for fire department access, fire protection systems, BESS design, installation, operation, and removal.	**Yes.** All project components would be consistent with the requirements of the CFC including those pertaining to fire apparatus access, and BESS design.
Local	
Solano County General Plan. Establishes policies and actions that guide firesafe development and local emergency services.	**Yes.** The project would conform with the requirements set forth in the Solano County General Plan. A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**. The project would include preparation and implementation of a Fire Prevention Plan during construction and O&M activities.
Solano County Municipal Code. Contains the Solano County Fire Code with requirements pertaining to fire safety.	**Yes.** All project components comply with the Solano County fire code.
Solano County Community Wildfire Protection Plan (CWPP) provides a comprehensive assessment of wildfire risk and provides a framework for planning and implementation of mitigation measures.	**Yes.** The project would conform with the requirements set forth in the Solano County Community Wildfire Protection Plan. A Fire Prevention Plan would be required by COCs **WORKER SAFETY-1** and **WORKER SAFETY-2**. The project would include preparation and implementation of a Fire Prevention Plan during construction and O&M activities.
The City of Vacaville General Plan Safety Element Requires the fire department to review emergency communication systems and fire safety designs for developments involving hazardous materials, and review and approve the HMBP for the development.	**Yes.** All project components would conform with the City of Vacaville General Plan Safety Element.

5.7.4 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to hazardous materials, hazardous waste and wildfire and would conform with applicable LORS. CEC staff recommends adopting the conditions of certification as detailed in subsection "5.7.5 Proposed Conditions of Certification" below.

5.7.5 Proposed Conditions of Certification

The following proposed COCs include measures to both mitigate environmental impacts and ensure conformance with applicable LORS. The conditions, including verifications,

below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

HAZ-1 The project owner shall prepare a Hazardous Materials Business Plan (HMBP) and a Spill Prevention Control and Countermeasure (SPCC) Plan and provide these plans to the Solano County Department of Resource Management, Environmental Health Services Division for review and comment and to the Compliance Project Manager (CPM) for review and approval prior to the start of operations.

Verification: At least 60 days prior to the start of operation the project owner shall prepare and submit the HMBP and SPCC Plan to the Solano County Department of Resource Management, Environmental Health Services Division for comment and to the CPM for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to the Solano County Department of Resource Management, Environmental Health Services Division requesting review and comment. The HMBP and SPCC must be approved before start of operation of the project.

At least 30 days prior to the start of operation, the project owner shall provide copies of any comment letters received from the Solano County Department of Resource Management, Environmental Health Services Division along with any changes to the HMBP and SPCC plans for CPM review and approval. After CPM review and approval, the project owner shall provide complete copies of the final HMBP and SPCC to the Solano County Department of Resource Management, Environmental Health Services Division sending copies of the correspondence to the CPM.

HAZ-2 After the start of project operation, the project owner shall not use any new hazardous material or change the quantity of hazardous materials that would require a change in the project's HMBP unless approved in advance by the CPM.

Verification: At least 30 days prior to changing the quantity of or using a new hazardous material onsite, the project owner shall notify and seek approval from the CPM in writing. The project owner shall provide to the CPM, in the Annual Compliance Report, the HMBP's list of hazardous materials and quantities contained at the facility.

HAZ-3 The project owner shall report the initial and new permanent or temporary hazardous waste identification numbers from the U.S. EPA or the Cal-EPA DTSC (as appropriate based on the type and quantity of hazardous waste generated) prior to generating any hazardous waste during demolition, construction, or operations.

Verification: The project owner shall keep a copy of the identification number(s) on file at the project site and provide documentation of the hazardous waste generation and notification and receipt of the number from the EPA to the CPM in the next scheduled Monthly Compliance Report after receipt of the number. Submittal of the notification and issued number documentation to the CPM is only needed once, unless there is a change in ownership, operation, waste generation, or waste characteristics that requires a new notification to the U.S. EPA or the Cal-EPA DTSC. Documentation of any new or revised hazardous waste generation notifications or changes in identification number shall be provided to the CPM 30 days before the change occurs.

HAZ-4 Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the CPM for review and approval.

The Construction Site Security Plan shall include the following:

- Perimeter security consisting of fencing enclosing the construction area.
- Security guards or electronic surveillance during hours when construction personnel are not present at the site.
- Site access control consisting of a check-in procedure or tag system for construction personnel and visitors.
- Written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site.
- Protocol for contacting law enforcement and the CPM in the event of suspicious activity, incident, or emergency.
- Evacuation procedures.

Verification: At least 30 days prior to commencing construction, the project owner shall submit a site-specific Construction Security Plan to the CPM for review and approval.

HAZ-5 The project owner shall also prepare a site-specific security plan for the commissioning and operational phases that would be available to the CPM for review and approval. The project owner shall implement site security measures that address physical site security and hazardous materials storage. The level of security to be implemented shall not be less than that described below.

The Operation Security Plan for the BESS and project substation shall include the following:

1. Permanent full perimeter fence or wall, at least eight feet high and topped with barbed wire or the equivalent (CCR Title 8, Section 2812.1 High Voltage Safety Order).

2. Main entrance security gate, either hand operated or motorized.
3. Evacuation procedures.
4. Protocol for contacting law enforcement and the CPM in the event of suspicious activity or emergency.
5. Written standard procedures for employees, contractors, and vendors when encountering suspicious objects or packages on site or off site.
    A. A statement (refer to sample, **Attachment A**), signed by the project owner certifying that background investigations have been conducted on all project personnel. Background investigations shall be restricted to determine the accuracy of employee identity and employment history and shall be conducted in accordance with state and federal laws regarding security and privacy.
    B. A statement(s) (refer to sample, **Attachment B**), signed by the contractor or authorized representative(s) for any permanent contractors or other technical contractors (as determined by the CPM after consultation with the project owner), that are present at any time on the site to repair, maintain, investigate, or conduct any other technical duties involving critical components (as determined by the CPM after consultation with the project owner) certifying that background investigations have been conducted on contractors who visit the project site.
6. Site access controls for employees, contractors, vendors, and visitors.
7. A statement(s) (refer to sample, **Attachment C**), signed by the owners or authorized representative of hazardous materials transport vendors, certifying that they have prepared and implemented security plans that are consistent with 49 CFR 172.880, and that they have conducted employee background investigations in accordance with 49 CFR Part 1572, subparts A and B.
8. Closed circuit TV (CCTV) monitoring system, recordable, and viewable in the O&M building (or remotely) with cameras able to pan, tilt, and zoom, have low-light capability, and able to view 100 percent of the perimeter fence, and outside entrances to the site for the BESS and O&M building.
9. Additional measures to ensure adequate perimeter security consisting of either:
    A. Perimeter breach detection or onsite motion detector capabilities; and
    B. Security guard(s) present 24 hours per day, seven days per week.
    C. Facility personnel on site 24 hours per day, seven days per week; or
    D. Continuous remote monitoring 24 hours per day, seven days per week, with local duty personnel on-call 24 hours per day, seven days per week

and capable of coordinating emergency response actions with emergency personnel and of arriving on-site within 30 minutes or less.

The project owner shall fully implement the security plans and obtain CPM approval of any substantive modifications to those security plans. The CPM may authorize modifications to these measures or may require additional measures such as protective barriers for critical facility components, or additional guidance provided by the U.S. Department of Homeland Security, the U.S. Department of Energy, or the North American Electrical Reliability Corporation (NERC), after consultation with both appropriate law enforcement agencies and the project owner.

Verification: At least 30 days prior to the initial receipt of hazardous materials onsite, the project owner shall submit a site-specific operations site security plan to the CPM for review and approval. In the annual compliance report, the project owner shall include signed statements similar to Attachments A and B that all current project employees and appropriate contractor background investigations have been performed, and that updated certification statements have been appended to the operations security plan. In the annual compliance report, the project owner shall include a signed statement similar to Attachment C that the operations security plan includes all current hazardous materials transport vendor certifications for security plans and employee background investigations.

HAZ-6 The project owner shall prepare and submit to the CPM a Soils Management Plan (SMP) prior to any ground disturbing activities. The SMP shall be prepared/approved by a California Registered Civil Engineer or a California Registered Geologist with sufficient experience in hazardous waste management. The purpose of the SMP is to establish appropriate management practices and procedures for handling impacted soil or groundwater or other materials that may be encountered during construction activities to ensure worker protection from toxicant exposure. The SMP shall be updated as needed to reflect changes in laws, regulations, or site conditions. All ground disturbing activities at the site and potential disposal of contaminated soil or groundwater shall be conducted in accordance with the SMP. Where actions are required in accordance with the SMP, an SMP summary report, which includes all analytical data and other findings, shall be submitted once the earthwork has been completed.

Topics covered by the SMP shall include, but not be limited to:

- Land use history including description and locations of any known contamination.
- The nature and extent of any previous investigations and remediation at the site.

- The nature and extent of any unremediated contamination at the proposed site.
- A listing and description of institutional controls such as the county's excavation ordinance and other local, state, and federal regulations and laws that would apply to the project.
- Names and positions of individuals involved with site management and their specific roles.
- An earthwork schedule.
- A description of protocols for the investigation and evaluation of any previously unidentified contamination that may be encountered in time. The protocol shall be for temporary and permanent controls that may be required to reduce exposure to onsite workers, visitors, and the public.
- A site-specific Health and Safety Plan (HSP) to be implemented by all contractors and subcontractors at the site. The HSPs shall be specific to each of the contractors' or subcontractors' scopes of work. The HSPs shall be prepared by a Certified Industrial Hygienist and would protect onsite workers by including engineering controls, personal protective equipment, monitoring, and security to prevent unauthorized entry and to reduce construction related hazards. The HSPs shall address the possibility of encountering subsurface chemical contamination and include procedures to protect workers and the public. The HSPs shall be updated as needed if site conditions change significantly, such as discovery of contaminated soil or groundwater. Copies of the approved HSPs shall be kept at the project site.
- Hazardous waste determination and disposal procedures for known and previously unidentified contamination.
- Requirements for site-specific techniques at the site to minimize dust, manage stockpiles, run-on and run-off controls, waste disposal procedures, etc.
- Copies of relevant permits or closures from regulatory agencies.

Verification: At least 45 days prior to any ground disturbance, the project owner shall submit the SMP to the Solano County CUPA for review and comment and to the CPM for review and approval. An SMP summary shall be submitted to the CPM within 30 days of completion of any ground disturbance.

HAZ-7 The project owner shall provide the resume of an experienced and qualified professional engineer or professional geologist, who shall be available for consultation during site characterization (if needed), excavation, and grading activities, to the CPM for review and approval. The resume shall reflect experience in remedial investigation and feasibility studies.

The professional engineer or professional geologist shall be given full authority by the project owner to oversee any earth moving activities that have the potential to disturb contaminated soil or groundwater.

Verification: At least 30 days prior to the start of site mobilization, the project owner shall submit the resume to the CPM for review and approval.

HAZ-8 If seemingly contaminated soil or groundwater is identified during site characterization, demolition, excavation, or grading at either the proposed site or linear facilities (as evidenced by discoloration, odor, detection by handheld instruments, or other signs), the professional engineer or professional geologist shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and provide a written report to the project owner, Solano County CUPA, and the CPM stating the recommended course of action.

Depending on the nature and extent of contamination, the professional engineer or professional geologist shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the professional engineer or professional geologist, significant remediation may be required, the project owner shall contact the CPM and representatives of the Solano County CUPA for guidance and possible oversight.

Verification: The project owner shall submit any final reports filed by the professional engineer or professional geologist to the CPM within 5 days of their receipt. The project owner shall notify the CPM within 24 hours of any orders issued to halt construction.

HAZ-9 The project owner shall develop and implement a Sampling and Analysis Plan (SAP). The SAP shall require sampling surface water and groundwater (as applicable) and surface soil following any BESS fire incident. The SAP shall provide for sampling and analysis of on and off-site soils, surface wipe samples, and nearby off-site surface waters. Groundwater sampling shall be conducted if there is reasonable concern that firefighting water or other potentially impacted liquids infiltrated into the ground. Water quality sampling shall identify constituents in any firefighting water used to extinguish the fire and ensure that the appropriate actions are taken for water disposal or treatment after the fire. The project owner shall ensure the SAP includes notification requirements, dependent upon the results of the soil sampling, to the Department of Toxic Substances Control (DTSC) within 24 hours of a finding that soil levels are above naturally occurring background for this region of California. Any opinion from the (DTSC) regarding the soil sampling results shall be reported to the CPM within 24 hours. If water samples obtained from nearby wetlands or other surface waters show contaminant concentrations exceeding naturally occurring background levels, and these contaminants may have been due to deposition or

runoff from the plume of a BESS fire, the project owner shall notify the Central Valley Regional Water Quality Control Board (CVRWQCB) within 24 hours of that finding. Any opinion from the CVRWQCB shall be provided to the CPM within 24 hours of receipt. The SAP shall be submitted to the CPM for review and approval, and to the California Department of Health (CDPH) and the local county Department of Public Health for review and comment.

Verification: No later than 120 days prior to proposed BESS operations, the project owner shall submit the proposed SAP to the CPM for review and approval, and to the CDPH and local county DPH for review and comment. The project owner shall also submit to the CPM any comment letters received from the CDPH and local county DPH, along with responses to comments and any proposed revisions of the SAP, for CPM for review and approval.

HAZ-10 To ensure vegetation management is maintained, the current owner shall obtain an inspection and report from a County-authorized Wildland Fire Safety Inspector (or 3rd party consultant) by June 1 of each year, certifying that vegetation management activities throughout have been performed pursuant to plans, that shall include, but not be limited to:

- 100-foot setbacks from the property line for BESS enclosures.
- Removal of all vegetation within the security fence perimeter.
- Vegetation management around power poles, transmission towers and lines in compliance with state requirements.
- 100 feet of defensible space around all buildings, if buildings are placed closer to the security perimeter fence than this minimum, then exterior fuel modification shall be provided to ensure at least 100 feet of defensible space is provided.

Verification: The project owner shall provide the vegetation management inspection report to the DFPD by June 1 annually for review and comment. The project owner shall provide to the CPM, in the Annual Compliance Report, the vegetation management inspection report, including DFPD comments, if any, and any corrective actions taken by the project owner for review and approval.

HAZ-11 The project owner shall prepare and submit to the CPM a Sampling and Analysis Plan (SAP) and Phase II ESA to establish the baseline conditions related to the presence of agrichemicals or other impacts to soils from historical agricultural activities, including pesticide use, at the project site, including off-site project components.

Topics covered by the SAP shall include, but not be limited to:

- A discussion of sample types and locations.

- Applicable sampling and testing standards that will be followed in the Phase II ESA.
- A discussion of applicable screening levels that will apply to the project.
- Information on the state certified laboratory that will conduct the analysis.

The owner shall prepare and submit a Phase II ESA for the proposed project footprint, including project site and off-site project components, using methods described by the American Society for Testing and Materials (ASTM) entitled Standard Practice for Environmental Site Assessments: Phase II Environmental Site Assessment Process (Designation: E1903-19), which is incorporated by reference in its entirety; or an equivalent method agreed upon by the applicant and the CPM that provides similar documentation of the potential level and extent of site contamination.

Verification: At least 90 days prior to the start of construction, the project owner shall submit the SAP to the CPM for review and approval. At least 45 days prior to the planned start of ground disturbing activities, the project owner shall submit the Phase II ESA to the CPM for review and approval.

5.7.6 Recommended Mitigation Measures

There are no recommended mitigation measures for hazards, hazardous materials/waste, and wildfire.

5.7.7 References

California Environmental Protection Agency (CalEPA) 2025a. Sites Identified with Waste Constituents above Hazardous Waste Levels outside the Waste Management Unit. Accessed on November 20, 2025. Accessed online at: https://calepa.ca.gov/wp-content/uploads/2016/10/SiteCleanup-CorteseList-CurrentList.pdf

California Environmental Protection Agency (CalEPA) 2025b. Cortese List Data Resources. Accessed on June 17, 2025. Accessed online at: https://calepa.ca.gov/sitecleanup/corteselist/

California Department of Forestry and Fire Protection (CAL FIRE) 2025a. Fire Hazard Severity Zones in State Responsibility Area, last updated February 24, 2025. Accessed on June 18, 2025. Accessed online at: https://calfire-forestry.maps.arcgis.com/apps/webappviewer/index.html?id=988d431a42b242b29d89597ab693d008

California Department of Forestry and Fire Protection (CAL FIRE) 2025b. California Historical Fire Perimeters Webmap. Accessed on June 18, 2025. Available online at: https://www.fire.ca.gov/what-we-do/fire-resource-assessment-program/fire-perimeters

California Public Utilities Commission (CPUC) 2025. CPUC High Fire Threat District (HFTD) map viewer. Accessed June 18, 2025. Available online at: https://experience.arcgis.com/experience/7dfb589984a442e79b1441e791341db0

City of Vacaville 2023a. City of Vacaville Emergency Operations Plan. Accessed February 2026. Accessed online at: https://www.cityofvacaville.gov/government/fire-department/emergency-operations-plan

City of Vacaville 2023b. City of Vacaville Safety Element Update. Accessed March 2026. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/safety-element

City of Vacaville 2025. City of Vacaville Municipal Code. Accessed March 2026. Accessed online at: https://www.codepublishing.com/CA/Vacaville/#!/Vacaville01/Vacaville01.html

Department of Toxic Substances Control (DTSC) 2025. EnviroStor. Accessed on June 18, 2025. Accessed online at: https://www.envirostor.dtsc.ca.gov/public/

NYSERDA 2023 – New York State Energy Research and Development Authority (NYSERDA). New York State Interagency Fire Safety Working Group, Air, Soil, and Water Data Findings. December 2023. Assessed April, 2025. Available online at: https://s3.documentcloud.org/documents/24738054/nysdata-collection-report_wsummaryr1.pdf

Pacific Gas & Electric Company (PG&E). 2017. Good Housekeeping, Activity Specific Erosion and Sediment Control Plan (A-ESCP). PG&E Construction Stormwater Group. April 2017.

Pacific Gas & Electric Company (PG&E). 2024. Community Wildfire Safety Program. Accessed February 2024. Accessed online at: https://www.pge.com/en/outages-and-safety/safety/community-wildfire-safety-program.html.html

Pacific Gas & Electric Company (PG&E). 2025. *2023-2025 Wildfire Mitigation Plan R8*. Docket Title: 2023 to 2025 Electrical Corporation Wildfire Mitigation Plans Docket #: 2023-2025-WMPs. Accessed online at: https://www.pge.com/assets/pge/docs/outages-and-safety/outage-preparedness-and-support/021325-2023-2025-wmp-r8.pdf

Solano County 2008. Solano County General Plan. November 2008. Accessed online at: https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

Solano County 2020. Solano County CUPA Operational Area Plan for Emergency Response to Hazardous Materials Incidents. Accessed February 2026. Accessed at: https://www.solanocounty.gov/government/resource-management/environmental-health/hazardous-materials-hazmat-program

Solano County 2022. Solano County Multi-Jurisdictional Hazard Mitigation Plan. Accessed February 2026. Accessed online at: https://www.solanocounty.gov/government/office-emergency-services/prepare-emergency/emergency-plans

Solano County 2023. Solano County Community Wildfire Protection Plan. Accessed February 2026. Accessed online at: https://solanofsc.org/community-wildfire-protection-plan-cwpp/#:~:text=The%202023%20CWPP%20reviews%2C%20verifies,in%20the%20County%2C%20from%20wildfire

Solano County 2024a. Travis Air Force Base Land Use Compatibility Plan. Last updated August 8, 2024. Accessed online at: https://content.solanocounty.gov/sites/default/files/2025-05/Travis AFB LUCP %282024%29_0.pdf

Solano County 2024b. Solano County Emergency Response Plan. Accessed February 2026. Accessed online at: https://www.solanocounty.gov/archival-document?document=https://content.solanocounty.gov/sites/default/files/2025-05/Solano_EOP_Base%20Plan.pdf&ad=aHR0cHM6Ly9jb250ZW50LnNvbGFub2NvdW50eS5nb3Yvc2l0ZXMvZGVmYXVsdC9maWxlcy8yMDI1LTA1L1NvbGFub19FT1BfQmFzZSUyMFBsYW4ucGRm&title=Solano%20EOP:%20Base%20Plan

Solano County 2026. Solano County Hazardous Materials (HazMat) Program. Accessed February, 2026. Accessed online at: https://www.solanocounty.gov/government/resource-management/environmental-health/hazardous-materials-hazmat-program

State Water Resources Control Board (SWRCB) 2025. GeoTracker. Accessed on February 5, 2025. Accessed online at: https://geotracker.waterboards.ca.gov/

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part 1. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025d – Tetra Tech (TN 263281). Data Request Responses Set #2 Part 1. Docketed May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026e – Tetra Tech (TN 268433). Project Description Update #2, Part 2. Docketed February 2, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024s – Tetra Tech (TN 259900). Volume 2 App 4-9 Hazards Appendices. Docketed November 5, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

United States Environmental Protection Agency (U.S. EPA) 2025. Exposure Assessment Tools by Routes, last updated October 1, 2025. Accessed on June 18, 2025. Accessed online at: https://www.epa.gov/expobox/exposure-assessment-tools-routes

Victorville Daily Press (VV Daily Press) 2024. Caltrans responds to lithium battery fire that blocked 15 Freeway to Las Vegas for 2 days. Updated July 31, 2024.

Accessed online at: https://www.vvdailypress.com/story/news/fire/2024/07/31/caltrans-responds-to-truck-fire-that-blocked-15-freeway-to-las-vegas/74620134007/

SAMPLE CERTIFICATION (Attachment A)

Affidavit of Compliance for Project Owners

I, _____
(Name of person signing affidavit) (Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____
(Company name)

for employment at

_____
(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment B)

Affidavit of Compliance for Contractors

I, _____
(Name of person signing affidavit) (Title)

do hereby certify that background investigations to ascertain the accuracy of the identity and employment history of all employees of

_____
(Company name)

for contract work at

_____
(Project name and location)

have been conducted as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

SAMPLE CERTIFICATION (Attachment C)

Affidavit of Compliance for Hazardous Materials Transport Vendors

I, _____
(Name of person signing affidavit) (Title)

do hereby certify that the below-named company has prepared and implemented security plans in conformity with 49 CFR 172.880 and has conducted employee background investigations in conformity with 49 CFR 172, subparts A and B,

_____
(Company name)

for hazardous materials delivery to

_____
(Project name and location)

as required by the California Energy Commission Decision for the above-named project.

_____
(Signature of officer or agent)

Dated this _____ day of _____, 20 _____.

THIS AFFIDAVIT OF COMPLIANCE SHALL BE APPENDED TO THE PROJECT SECURITY PLAN AND SHALL BE RETAINED AT ALL TIMES AT THE PROJECT SITE FOR REVIEW BY THE CALIFORNIA ENERGY COMMISSION COMPLIANCE PROJECT MANAGER.

5.8 Land Use and Agriculture

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to land use and agriculture. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.8.1 Environmental Setting

The land use and agriculture analysis is focused on the proposed project's compatibility with existing uses and agricultural resources as well as consistency with land use plans, policies, and regulations. In general, construction and operation of an energy storage facility would be incompatible with a proposed site if there is a preclusion of a designated land use or conflict with a plan, policy, or regulation (e.g., zoning for agricultural use) adopted for the purpose of avoiding or mitigating an environmental effect.[1] Additional impacts to surrounding land uses associated with noise, dust, traffic, and visual changes are discussed in detail in their respective sections of this Staff Assessment.

A land use analysis for a Staff Assessment typically evaluates effects on land resources such as forestry. As explained in this section, the project is located in an unincorporated rural area adjacent to suburban development, and there are no forestry resources within the project site or surrounding area. CEC staff reviewed the planning and zoning designations for the project site and confirmed that the site does not contain any land defined as forest land (Public Resources Code §12220(g)), timberland (Public Resources Code §4526), or land zoned Timberland Production (Government Code §51104(g)) (SC 2008; SC 2025b). As such, this analysis will focus exclusively on agricultural resources and land use, and no further discussion of forestry resources is included in this section.

Existing Conditions

Study Area

The extent of the area to be analyzed for impacts to agriculture and land use is considered the Land Use Study Area. The Land Use Study Area is defined as the geographic area within which the proposed project may directly or indirectly affect an existing land use, including agricultural resources. To determine the appropriate study area for this land use analysis, CEC staff has reviewed information from the project's Opt-In Application (TT 2024a; TT 2025c), including site plans, parcel information, and descriptions of project components. The Land Use Study Area encompasses the following:

1 2025 CEQA Statute and Guidelines, Appendix G (Environmental Checklist Form)

- **Project Site.** The proposed project site includes all parcels on which project components would be constructed including: (1) the approximately 40.3-acre battery energy storage system (BESS) facility, substation, and ancillary equipment area; (2) the approximately 1.1-mile-long generation-tie (gen-tie) right-of-way (ROW) that connects the BESS facility to the Vaca-Dixon Substation and includes the gen-tie line and the fiber optic cable pathway; and (3) the 7-acre gen-tie laydown area.
- **Project Zone of Influence.** A Zone of Influence (ZOI) is defined for the purpose of evaluating agricultural lands as part of the State of California, Department of Conservation, Land Evaluation and Site Assessment Model (DOC 1997). A project's Zone of Influence includes all parcels that are within, or intersect, a 0.25-mile buffer from a proposed project site.

Project Site

The project proposes to construct a BESS facility on one 40.3-acre parcel within unincorporated Solano County. The project would also construct a 1.1-mile-long 230-kilovolt (kV) gen-tie line and fiber optic cable pathway that would cross up to six parcels.[2] Of the six parcels required for the project, three parcels are located within unincorporated Solano County, and three parcels are located within the City of Vacaville.

Tables 5.8-1 provides further detail on each of the parcels within the project site, including the current onsite land uses, land use and zoning designations, and the project components proposed on each parcel.

TABLE 5.8-1 PROJECT PARCELS

Parcel	Land Use and Zoning Designations	Current Land Use/Project Components
SOLANO COUNTY		
APN 0141-030-090	Land Use: Agriculture (AG) Zoning: A-40	This 40.3-acre parcel was historically an orchard and is currently uncultivated (DWR 2024; Google Earth Pro 2025). The following project components would be constructed on this parcel: BESS, inverters, collector lines, substation, operations and maintenance facility, access roads, security lighting, perimeter fence, and a sound barrier. Two single circuit, 230-kV transmission structures would be erected in the northwest corner of the parcel for an overhead segment of the gen-tie that would extend 390 feet from the project substation until it transitions to an underground segment. A fiber optic cable pathway would also be installed on wood poles that would be parallel to but slightly offset from the gen-tie line (TT 2024a; TT 2025c).
APN 0141-030-080	Land Use: AG Zoning: A-40	This 40.7-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). The

2 Underground Route Option #2, which places the east-west segment within the Kilkenny Road ROW, would bypass APN 0141-010-030 and therefore cross five parcels instead of six.

TABLE 5.8-1 PROJECT PARCELS

Parcel	Land Use and Zoning Designations	Current Land Use/Project Components
(Underground Route Option #1 and #2)		project would construct an approximately 400-foot-long underground segment of the gen-tie line within a concrete duct bank that would extend along the southern side of the Solano Irrigation District (SID) canal (Google Earth Pro 2025; TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 30 feet (NEE 2026; Google Earth Pro 2025).
APN 0133-060-070 (PG&E Vaca-Dixon Substation)	Land Use: Public/ Quasi-Public (PQP) Zoning: A-20	This 87.7-acre parcel contains the Pacific Gas and Electric Company (PG&E) Vaca-Dixon Substation. The project would include four transmission structures constructed by PG&E, to connect the gen-tie line to the substation (TT 2024a; TT 2025c).
CITY OF VACAVILLE[1]		
APN 0133-060-010	Land Use and Zoning: Business Park (BP) Overlay: Northeast Growth Area	This approximately 2.4-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). The project would construct one 230-kV transmission structure within this parcel, which would serve as the point of change of ownership (POCO) structure (TT 2024a; TT 2025c) from the proposed project applicant to PG&E. The overhead gen-tie line would extend for approximately 600 feet across this parcel (Google Earth Pro 2025). A fiber optic cable pathway would also be installed on wood poles that would be parallel to but slightly offset from the gen-tie line (TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 220 feet (NEE 2026; Google Earth Pro 2025).
APN 0133-060-020	Land Use and Zoning: BP and Residential High Density (RH) Overlay: Northeast Growth Area	This 16.3-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). The project's underground gen-tie segment would transition to an overhead structure within this parcel (TT 2024a; TT 2025c). The parcel would contain a total of three single circuit, 230-kV transmission structures that would be used for an approximately 1,500-foot overhead segment of the gen-tie extending north along the east side of this parcel (Google Earth Pro 2025, TT 2024a; TT 2025c). A fiber optic cable pathway would also be installed on wood poles that would be parallel to but slightly offset from the gen-tie line (TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 220 feet (NEE 2026; Google Earth Pro 2025). Approximately 7.4 acres of this parcel would be used as a temporary laydown area during construction (TT 2024a; Google Earth Pro 2025).
APN 0141-010-030 (Underground Route Option #1)	Land Use and Zoning: BP Overlay: Northeast Growth Area	This 71.9-acre parcel is actively maintained as an orchard (DWR 2024; Google Earth Pro 2025). For Underground Route Option #1, the project would construct an approximately 1,500-foot-long underground segment of the gen-tie line within a concrete duct bank that would extend along the

TABLE 5.8-1 PROJECT PARCELS		
Parcel	**Land Use and Zoning Designations**	**Current Land Use/Project Components**
		northern side of the SID canal (Google Earth Pro 2025; TT 2024a; TT 2025c). The width of the gen-tie ROW within this parcel would be approximately 50 feet (NEE 2026; Google Earth Pro 2025).

Table Notes:
1 –Many of the City of Vacaville planning and zoning designations use the same terminology to ensure consistency across land use classifications.

Table 5.8-2 identifies the notable land uses that are nearest to the project site and indicates whether the land use is a sensitive receptor. A sensitive receptor is defined as a land use that is particularly sensitive to nuisance effects from construction, operation, and maintenance (e.g., noise, dust, traffic). Examples include residences, schools, hospitals, lodging and campgrounds, libraries, churches, nursing homes, auditoriums, and parks.

TABLE 5.8-2 NOTABLE LAND USES AND SENSITIVE RECEPTORS NEAR THE PROJECT SITE

Land Use	Land Use Type	Location	Distance	Land Use/Zoning Designation	Within 0.25 miles of Project	Sensitive Receptor
UNINCORPORATED SOLANO COUNTY						
Orchards, row crops	Agriculture	Immediately surrounding the project site (north and south of Kilkenny Road; east and west of Byrnes Road)	Immediately surrounding the project site	General Plan: Agriculture Zoning: A-20, A-40, A-80	X	
Residence	Agriculture, Residential	5405 Kilkenny Road Vacaville, CA 95687	Adjacent to the northern boundary of the project site, across Kilkenny Road	General Plan: Agriculture Zoning: A-40	X	X
Residence	Agriculture, Residential	5310 Kilkenny Road Vacaville, CA 95687	Approximately 0.2 miles west of the project site. Immediately south of, and adjacent to, the gen-tie route	General Plan: Agriculture Zoning: A-40	X	X
Residence	Agriculture, Residential	6957 Byrnes Road Vacaville, CA 95687	Approximately 640 feet north of the project site	General Plan: Agriculture Zoning: A-40	X	X
Residence	Agriculture, Residential	6975 Byrnes Road Vacaville, CA 95687	Approximately 760 feet north of the project site	General Plan: Agriculture Zoning: A-40	X	X
Residence	Agriculture, Residential	6991 Byrnes Road Vacaville, CA 95687	Approximately 0.26 miles north of the project site	General Plan: Agriculture Zoning: A-40		X
Residence	Agriculture, Residential	6740 Byrnes Road Vacaville, CA 95687	Approximately 0.3 miles southeast of the project site	General Plan: Agriculture Zoning: A-40		X
Bouzos Farms	Agriculture, Residential	6697 Byrnes Road Vacaville, CA 95687	Approximately 0.4 miles south of the project site	General Plan: Agriculture Zoning: A-40		X

TABLE 5.8-2 NOTABLE LAND USES AND SENSITIVE RECEPTORS NEAR THE PROJECT SITE

Land Use	Land Use Type	Location	Distance	Land Use/Zoning Designation	Within 0.25 miles of Project	Sensitive Receptor
Residence	Agriculture, Residential	7028 Byrnes Road Vacaville, CA 95687	Approximately 0.4 miles north of the project site	General Plan: Agriculture Zoning: A-40		X
Christiane Noelting Dressage Center	Agriculture, Commercial	6954 Lewis Road Vacaville, CA 95687	Approximately 0.5 miles northeast of the project site	General Plan: Agriculture Zoning: A-40		X
Solano Brewing Company	Agriculture, Commercial	5500 Weber Road Vacaville, CA 95687	Approximately 0.5 miles northeast of the project site	General Plan: Agriculture Zoning: A-40		
Scattered residential development (Unincorporated Solano County)	Agriculture, Residential	Along Weber, Fox, Lewis, Walnut, and Poplar Roads	Within 1 mile of the project site	General Plan: Agriculture/Rural Residential Zoning: A-20, A-40		X
Vaca-Dixon Substation (PG&E)	Utilities	Northwest of the project site, across Interstate 80	Approximately 0.7 miles northwest of the project site	General Plan: Public Quasi-Public (PQP) Zoning: A-20		
Valley Church and La Casa del Padre	Religious Assembly	5063 Maple Rd #100, Vacaville, CA 95687	Approximately 1.2 miles southwest of the project site	General Plan: Rural Residential Zoning: RR-5		X
New Beginnings of Faith Missionary Baptist Church	Religious Assembly	5100 Maple Rd, Vacaville, CA 95687	Approximately 1.2 miles southwest of the project site	General Plan: Rural Residential Zoning: RR-2.5		X
Sacramento Valley National Cemetery	Cemetery	5810 Midway Road, Dixon, CA 95620	Approximately 2.3 miles northeast of the project site	General Plan: PQP Zoning: A-40		X
CITY OF VACAVILLE						
Kaiser Permanente Vacaville Medical Center	Medical	1 Quality Drive, Vacaville, CA 95688	Approximately 1 mile west of the project site	General Plan: Public/Institutional Zoning: PF		X

TABLE 5.8-2 NOTABLE LAND USES AND SENSITIVE RECEPTORS NEAR THE PROJECT SITE

Land Use	Land Use Type	Location	Distance	Land Use/Zoning Designation	Within 0.25 miles of Project	Sensitive Receptor
Solano Community College - Vacaville Center	Educational	2001 North Village Parkway, Vacaville, CA 95688	Approximately 1 mile northwest of the project site	General Plan: Public/Institutional Zoning: PF		X
Scattered residential development (City of Vacaville)	Residential	Along Maple Road	Approximately 1.5 - 3 miles from project	General Plan: Residential Low Density Zoning: RL-5		X
Cogir of Vacaville Senior Living	Residential	799 Yellowstone Drive, Vacaville, CA 95687	Approximately 1.5 miles southwest of the project site	General Plan: Residential High Density Zoning: RH		X
Academy of 21st Century Learning	Educational	3333 Vaca Valley Pkwy # 800, Vacaville, CA 95688	Approximately 1.5 miles west of the project site	General Plan: Business Park Zoning: BP		X
The Mission	Religious Assembly	6391 Leisure Town Rd, Vacaville, CA 95687	Approximately 1.8 miles southwest of the project site	General Plan: Residential Estate Zoning: RE-10		X
Leisure Town	Residential	Leisure Town Road, Vacaville, CA 95687	Approximately 2.1 miles southwest of the project site	General Plan: Residential Low Density Zoning: RL-6		X
Nut Tree Airport	Transportation	301 County Airport Road, Vacaville, CA 95688	Approximately 2.5 miles southwest of the project site	General Plan: Public/Institutional Zoning: PF		
Easterly Wastewater Treatment Plant	Utilities	6040 Vaca Station Road, Elmira, CA 95625	Approximately 2.5 miles southeast of the project site	General Plan: Public/Institutional Zoning: PF		
Cooper Elementary School	Educational	750 Christine Dr, Vacaville, CA 95687	Approximately 2.8 miles southwest of the project site	General Plan: Schools Zoning: PF		X

TABLE 5.8-2 NOTABLE LAND USES AND SENSITIVE RECEPTORS NEAR THE PROJECT SITE

Land Use	Land Use Type	Location	Distance	Land Use/Zoning Designation	Within 0.25 miles of Project	Sensitive Receptor
Bethany Lutheran School	Educational	1011 Ulatis Dr, Vacaville, CA 95687	Approximately 3.4 miles southwest of the project site	General Plan: Residential High Density Zoning: RH		X
Childtime of Vacaville	Educational	1201 Burton Dr, Vacaville, CA 95687	Approximately 3.1 miles southwest of the project site	General Plan: Commercial Office Zoning: CO		X
FEDERAL						
Travis Air Force Base	Military	400 Brennan Circle, Travis AFB, CA 94535	Approximately 8.3 miles southeast of the project site	N/A		

Agriculture

This section describes baseline conditions for agricultural resources within the Land Use Study Area (i.e., the ZOI). Agricultural resource data was collected from the following sources: U.S. Department of Agriculture Natural Resources Conservation Service Web Soil Survey, California Department of Conservation (DOC) Farmland Mapping and Monitoring Program (FMMP) and Williamson Act datasets, California Department of Water Resources Provisional Statewide Crop datasets, Solano County and City of Vacaville planning documents, and aerial imagery using Google Earth.

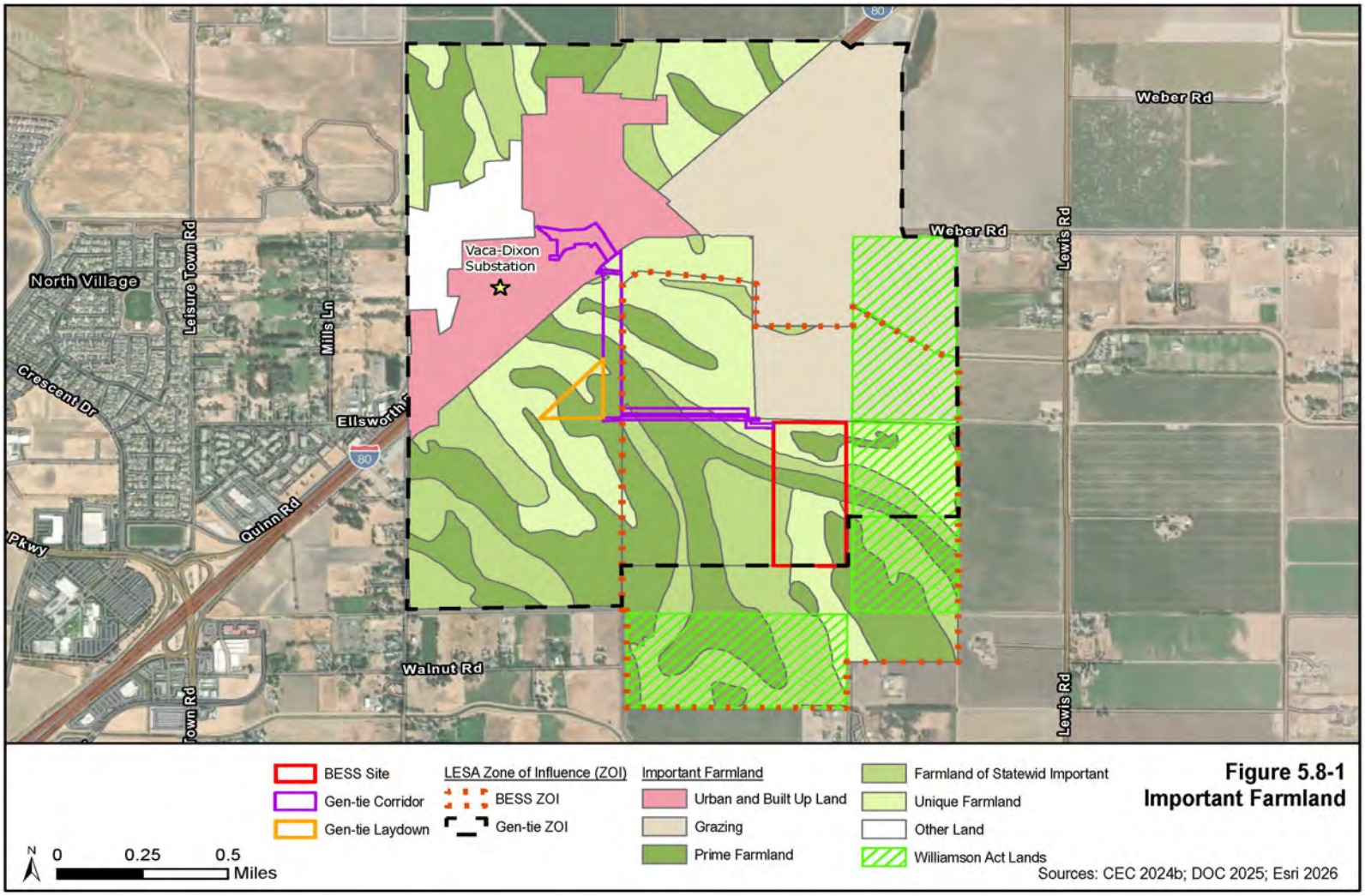
California Department of Conservation (DOC) Important Farmland

The DOC FMMP designates Important Farmland throughout the State.[3] Important Farmland categories within the ZOI, which encompasses the BESS site and gen-tie ROW, are illustrated in **Figure 5.8-1** and include the following:

- **Prime Farmland (P).** Prime Farmland is characterized with the best combination of physical and chemical features able to sustain long-term agricultural production (DOC 2024). The land must have a history of irrigation within the four years preceding the most recent Important Farmland map date. The proposed BESS site would occupy approximately 12.8 acres of land designated by the DOC as Prime Farmland (DOC 2022b; TT 2024a). An additional 12.1 acres of Prime Farmland would be located within the gen-tie ROW and adjacent laydown area.
- **Farmland of Statewide Importance (S).** This Farmland type similar to Prime Farmland but with minor shortcomings, such as greater slopes or less ability to store soil moisture (DOC 2024). Farmland of Statewide Importance must have a history of irrigation within the four years preceding the most recent Important Farmland map date. The proposed BESS site would occupy approximately 9.1 acres of land designated by the DOC as Farmland of Statewide Importance (DOC 2022b; TT 2024a). An additional 1 acre of Farmland of Statewide Importance would be occupied by the gen-tie ROW.
- **Unique Farmland (U).** Unique Farmland is characterized as lesser quality soils used for the production of the State's leading agricultural crops (DOC 2024). The land is usually irrigated but may include non-irrigated orchards or vineyards as found in some climatic zones in California. The land must have a history of irrigation at some point within the four years preceding the most recent Important Farmland map date. The proposed BESS site would occupy approximately 18.4 acres of land designated by the DOC as Unique Farmland (DOC 2022b; TT 2024a). An additional 8.4 acres of Unique Farmland would be occupied by the gen-tie ROW and adjacent laydown area.

3 FMMP Important Farmland categories include Prime Farmland, Farmland of Statewide Importance, Unique Farmland, Farmland of Local Importance, and Grazing Land and constitutes “agricultural land” for the purposes of environmental review under CEQA (DOC 2023).

Figure 5.8-1 Important Farmland



Other Important Farmland categories that are located within the ZOI, but outside of the proposed BESS facility, include the following:

- **Grazing Land (G).** Grazing Land is characterized as having vegetation that is suitable for the grazing of livestock (DOC 2024). There is designated Grazing Land within the project's Zone of Influence site along the site's northern boundary (DOC 2024; TT 2024a).

Project construction and operation would permanently disturb DOC-designated Important Farmland within the BESS site, gen-tie ROW, and gen-tie laydown area. Per the project application, the BESS facility would be fenced, and agricultural activities would not be permitted within the BESS facility throughout the project's 30-year operation phase (TT 2024a). The applicant has also stated that the existing orchards within the gen-tie ROW and the gen-tie laydown area would be permanently removed (TT 2024a). **Table 5.8-3** provides the acreages of Important Farmland that would be permanently converted as a result of the proposed project.

TABLE 5.8-3 IMPORTANT FARMLAND: PERMANENT CONVERSION

Important Farmland Type	BESS Facility (Solano County)	Gen-Tie ROW (Solano County)	Gen-Tie ROW (City of Vacaville)	Gen-Tie Laydown (City of Vacaville)
Prime	12.8 acres	0 acres	7.1 acres	5.0 acres
Statewide	9.1 acres	0 acres	1.0 acre	0 acres
Unique	18.4 acres	0.5 acre	5.8 acres	2.1 acres
Total Acres	**40.3 acres**	**0.5 acre**	**13.9 acres**	**7.1 acre**

Source: DOC 2022b; TT 2024a

Williamson Act

The Williamson Act, also known as the California Land Conservation Act of 1965, enables local governments (e.g., Solano County) to enter into contracts with private landowners for the purpose of restricting specific parcels of land to agricultural or related open space use. In return, landowners receive a reduction of property taxes. During this contract period (i.e., 10- or 20-year agreement), this land cannot be developed or otherwise converted to another use.

There are no lands currently enrolled in a Williamson Act contract within the project site (i.e., BESS facility, gen-tie ROW, and gen-tie laydown area). There are five parcels enrolled in a Williamson Act contract within the project ZOI, to the northeast, east, and south boundaries of the project (DOC 2022a).

Regulatory

The following local laws, ordinances, regulations, and standards (LORS) relating to land use would be applicable to the proposed project. A discussion of the proposed project's conformance with these LORS is provided in subsection 5.8.3, **Table 5.8-4**.

Local

Solano County

Solano County General Plan. The Solano County General Plan governs all unincorporated lands within the County, which includes the proposed BESS site (SC 2008). The Land Use Element (Chapter 2) contains policies intended to direct growth toward existing cities; preserve rural character; and integrate land-use, transportation, and service planning to maintain a balanced mix of agricultural, residential, commercial, industrial, and open-space uses (SC 2008). The Agriculture Element (Chapter 3) contains policies intended to preserve high-quality farmland, discourage premature conversion to non-agricultural uses, and support the economic viability of local farming (SC 2008). The County's General Plan organizes all designated Agriculture areas into ten agricultural regions, which are planning units that allow the County to tailor policies to the distinct soils, crops, and infrastructure found in each region (SC 2008). The project site (BESS facility and gen-tie) south of I-80 would be located within the County's Elmira/Maine Prairie agricultural region (SC 2008).

Solano County Municipal Code. The Solano County Municipal Code (Chapter 28, Zoning Regulations) is the codified collection of all ordinances adopted by the Board of Supervisors that supplies the legal framework to implement the County's General Plan and governs every land use decision. Proposed project components are zoned as follows:

- Exclusive Agriculture A-40: The BESS facility and a 400-foot underground segment of the gen-tie ROW would be located in the County's A-40 zoning designation, which requires a minimum lot area of 40 acres. An A-40 zoning designation allows for the construction of new utility facilities or infrastructure within or outside of an existing ROW, subject to a use permit (Solano County Code Section 28.21.20).
- Exclusive Agriculture A-20: The Vaca-Dixon Substation is located within the County's A-20 zoning designation, which requires a minimum lot area of 20 acres. PG&E would construct four transmission structures within PG&E's property to connect the gen-tie line to the substation. An A-20 zoning designation allows for the construction of new utility facilities or infrastructure within or outside of an existing ROW, subject to a use permit (Solano County Code Section 28.21.20).

Solano County Ordinance No. 2024-1858. This ordinance enacts Solano County's General Plan Implementation Program AG.I-1 by creating an Agricultural Mitigation Program. Per the County's Agricultural Mitigation Program, a proposed development or conversion of DOC-designated Important Farmland to non-agricultural uses would be subject to the mitigation requirements below (SC 2024a).

- Mitigation ratios
  - Projects that convert Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance shall be mitigated at a replacement ratio of up to 3:1. This means that for every acre converted or developed, up to three acres shall be protected.

  - Projects that convert land comprising a mix of Farmland classification may mitigate at the highest applicable ratio.
  - For purposes of calculating the mitigation obligation, a General Plan Amendment or Rezone application shall require mitigation for the full area of the legal parcel affected by the conversion and not merely any lesser portion of the parcel that may be sought to be developed or converted to another use at the time the conversion is proposed.
  - The mitigation ratio shall be determined based upon the most current published FMMP mapping and Farmland classification of the land.

- Mitigation Methods
  - If the area to be converted is 20 acres or more in size, the applicant shall grant an Agricultural Conservation Easement on land located within the Agricultural Reserve Overlay or within the same Agricultural Region as the land converted. If after at least one Good Faith Effort, the applicant cannot locate an Agricultural Conservation Easement on lands meeting that criterion, then the applicant shall grant an Agricultural Conservation Easement elsewhere in the unincorporated area of Solano County. If, after at least one additional Good Faith Effort, the applicant cannot locate an Agricultural Conservation Easement anywhere in the unincorporated area of Solano County, the applicant shall pay In-Lieu Fees or complete Alternative Mitigation to satisfy their mitigation obligation.

Solano County Ordinance No. ZT-25-02. On November 4, 2025, the Solano County Board of Supervisors adopted a permanent ordinance to regulate front-of-the-meter BESS (1 MW or greater) in the County's unincorporated areas (SC 2025a). Ordinance No. ZT-25-02 amended Chapter 28 of the Solano County Code to identify BESS as an allowable use within Manufacturing and Industrial zones, subject to a use permit (SC 2025c). The ordinance also amended Chapter 28 (Zoning Regulations) of the Solano County Code to prohibit BESS within the following zoning districts: Agricultural, Rural Residential, Residential-Traditional Community, Commercial, Watershed and Conservation, Marsh Preservation, and Park (SC 2025c).

City of Vacaville

City of Vacaville General Plan. The City of Vacaville General Plan is the City's principal blueprint through 2035, setting broad policy direction for resource conservation and development. Within this framework, the Land Use Element (Chapter 2) includes goals, policies, and actions for new development, particularly within the City's identified growth areas (City of Vacaville 2015a). The project's proposed gen-tie line would be located within the City's designated Northeast Growth Area. Per the City's General Plan, the Northeast Growth Area is a planned growth area of approximately 1,400 acres located along the City's northeastern Interstate 80 corridor, with portions inside the City limits and portions in unincorporated Solano County but within the City's Urban Growth Boundary; annexation is anticipated as planning approvals occur.

City of Vacaville Municipal Code. The City of Vacaville Municipal Code implements the General Plan by specifying development regulations and design requirements to guide orderly growth that meets the intent of the land use designations and zoning districts. The project's gen-tie would be sited on parcels designated and zoned as BP or RH, which are defined as the following:

- The Business Park (BP) land use and zoning designation is intended for office centers, research-and-development facilities, and medical and institutional uses.
- The Residential High Density (RH) land use and zoning designation provides opportunities for high-density multiple residential uses, including attached townhouses, condominiums, and apartments, with a base density of 20.1 units per gross acre and a maximum potential density of 30 units per gross acre.

City of Vacaville Ordinance No. 1942. On April 9, 2019, Vacaville City Council adopted Ordinance No. 1942, Agricultural and Avian Foraging Habitat Mitigation Program (City of Vacaville 2019). This ordinance implements the agricultural land and habitat conservation policies contained in the 2015 Vacaville General Plan related to permanently protecting agricultural land, avian foraging habitat, and open space. Per the City's Agricultural and Avian Foraging Habitat Mitigation Program, a proposed development that would convert Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (as classified by the California Department of Conservation) would be subject to a 1:1 mitigation ratio requirement. The City's Agricultural and Avian Foraging Habitat Mitigation Program also establishes requirements for the location and characteristics of the agricultural mitigation land, as well as the use of in-lieu fees to satisfy mitigation requirements.

City of Vacaville BESS Ordinance. On May 14, 2024, and June 25, 2024, the Vacaville City Council adopted and extended an interim ordinance (Ordinance No. 1993) that prohibited the City from accepting, processing, or approving any applications for front-of-the-meter BESS facilities (City of Vacaville 2024a and 2024b). The intent of the ordinance was to provide City staff with time to develop standards for utility-scale BESS. The City Council adopted the BESS ordinance on March 10, 2026 (City of Vacaville 2026b). The City's BESS ordinance prohibits front-of-the-meter BESS technologies that contain lithium-ion or other technology types with documented occurrences of thermal runaway events within the City of Vacaville. Other front-of-the-meter BESS technologies that have an unlikely risk of thermal runaway may be conditionally permitted in Public Facilities (PF), Industrial Park (IP), and Business Park (BP) zoning districts (City of Vacaville 2026b).

Cumulative

Table A-1 in Appendix A provides a list of past, present, and reasonably foreseeable projects that may be relevant to the cumulative analysis for each issue area. The geographic extent for the agriculture and land use cumulative analysis includes: (1) projects that would convert Important Farmland within Solano County, and (2) projects that could preclude or restrict access to the land uses surrounding the proposed project

along Kilkenny Road and Byrnes Road. The following is a list of the projects that are within the geographic extent for the agriculture and land use cumulative analysis:

- Map No. 2: Vaca Dixon Power Center Project
- Map No. 9: Chip Seal 2025 – Walnut Road
- Map No. 13: Chip Seal 2025 – Byrnes Road
- Map No. 15: Raysons Development
- Map No. 17: Donaldson-Ramos Development
- Map No. 31-33: The Farm at Alamo Creek
- Map No. 61: Homestead (Southwest Dixon Specific Plan)
- Map No. 64: A&P Children
- Map No. 111: Harvest at Dixon
- Map No. 128: Lombardo Ranch
- Map No. 152: The Campus Project

5.8.2 Environmental Impacts

AGRICULTURE AND LAND USE	Significant and Unmitigable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland.				
a. Would the project Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	☐	☒	☐	☐
b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☒	☐	☐
c. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?	☐	☐	☒	☐

AGRICULTURE AND LAND USE	Significant and Unmitigable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
d. Would the project preclude access to an established land use?	☐	☐	☒	☐
e. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, agriculture resources and land use and planning. Note that forestry resources is not included in the checklist as staff has determined that there are no forestry resources within the project site or in the surrounding area.

5.8.2.1 Methodology and Thresholds of Significance

To conduct the agriculture and land use analysis, CEC staff developed an inventory of potentially affected uses within the Land Use Study Area (**Figure 5.8-1** and **Table 5.8-2**). CEC staff reviewed docket files submitted by the applicant, agencies, and the public to identify potentially affected land uses. Data was also gathered through a review of aerial maps, open-source geospatial data, and applicable planning and policy documents.

Significance criteria used in this analysis are based on Appendix G of the CEQA Guidelines. An impact of the proposed project or alternative would be considered significant and would require mitigation if it would:

- Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use. In determining whether the acreage of Important Farmland conversion is significant, CEC staff used the California Land Evaluation and Site Assessment (LESA)[4] Model.
- Conflict with existing zoning for agricultural use, or conflict with a Williamson Act contract.
- Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use.

4 The formulation of a California Agricultural LESA Model was the result of Senate Bill 850 (Chapter 812 /1993), which charged the Resources Agency, in consultation with the Governor's Office of Planning and Research (now the Governor's Office of Land Use and Climate Innovation), with developing an amendment to Appendix G of the California Environmental Quality Act (CEQA) Guidelines concerning agricultural lands. Such an amendment is intended "to provide lead agencies with an optional methodology to ensure that significant effects on the environment of agricultural land conversions are quantitatively and consistently considered in the environmental review process" (Public Resources Code Section 21095).

- Preclude access to an established land use.
- Cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

5.8.2.2 Direct and Indirect Impacts

a. Would the project Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Impacts to agriculture would occur if DOC-designated Important Farmland is permanently converted to a non-agricultural use, the significance of which is evaluated per the California LESA Model. The 40.3-acre BESS site, 1.1-mile-long gen-tie ROW, and 7-acre gen-tie laydown area would be located on lands designated as Important Farmland by DOC. Below is a discussion of the Important Farmland impacts at the BESS facility, followed by a discussion of Important Farmland impacts along the gen-tie ROW and laydown area.

BESS Facility. As shown in **Table 5.8-3**, the proposed BESS facility would occupy 12.8 acres of Prime Farmland, 9.1 acres of Farmland of Statewide Importance, and 18.4 acres of Unique Farmland within Solano County. The BESS facility would be fenced, and agricultural activities would not be permitted within the BESS facility throughout the project's 30-year operation phase (TT 2024a). The DOC FMMP identifies the development of energy infrastructure on Important Farmland as a contributor to Farmland conversion (DOC 2018). Thus, construction and operation of the BESS facility would result in the permanent conversion of Important Farmland within Solano County to a non-agricultural use.

To evaluate the level of significance of this conversion, CEC staff used the LESA Model. The LESA Model rates the relative quality of land resources based upon specific measurable features and is composed of six different factors. Two "Land Evaluation" (LE) factors are based upon measures of soil resource quality. Four "Site Assessment" (SA) factors provide measures of a given project's size, water resource availability, surrounding agricultural lands, and surrounding protected resource lands. For a given project, each of these factors is separately rated on a 100-point scale. The factors are then weighted relative to one another and combined, resulting in a single numeric score for a given project, with a maximum attainable score of 100 points. It is this project score that becomes the basis for making a determination of a project's potential significance, based upon a range of established scoring thresholds (DOC 1997).

The applicant provided an initial LESA analysis of the 40.3-acre BESS facility in the Opt-In Application (TT 2024a). CEC staff identified several data inconsistencies and requested clarification from the applicant on the assumptions used in their LESA analysis (CEC 2024e). In response, the applicant submitted a revised LESA analysis that corrected the acreage calculations and scoring inconsistencies (TT 2025b). CEC staff reviewed the revised information and conducted an independent LESA analysis. Consistent with the applicant's updated scores for the BESS facility, the results of CEC staff's analysis are as follows:

- LE score of 27.6
- SA score of 31.5
- Total score of 59.1

According to the LESA model scoring thresholds, a project with a total score between 40 and 59 points would be considered a significant conversion of agricultural lands if both the Land Evaluation (LE) and Site Assessment (SA) sub-scores are 20 points or more.[5] As the LE and SA scores for the BESS facility are both greater than 20, the project's conversion of Important Farmland within Solano County is a significant impact if left unmitigated.

Gen-Tie ROW and Laydown Area. As shown in **Table 5.8-3**, the proposed gen-tie ROW and gen-tie laydown area would be constructed on DOC-designated Farmland within the City of Vacaville that consists of 12.1 acres of Prime Farmland, 1 acre of Farmland of Statewide Important, and 7.9 acres of Unique Farmland. The gen-tie ROW would also occupy 0.5 acres of Unique Farmland in Solano County. Agricultural activities can be compatible with transmission corridors if, upon completion of construction, agricultural use within the gen-tie ROW is reestablished and agricultural activities are allowed to continue. However, the applicant has stated that it would permanently remove the existing orchards within the gen-tie ROW and laydown area (TT 2024a). As such, project construction and operation of the gen-tie ROW would result in the permanent conversion of Important Farmland within the City of Vacaville to a non-agricultural use.

CEC staff used the LESA Model to evaluate the level of significance of this conversion within the City of Vacaville. As the project application did not include the gen-tie ROW or gen-tie laydown area in the applicant's LESA analysis, CEC staff conducted an independent analysis using data from the Natural Resources Conservation Service and the California Department of Water Resources (NRCS 2025; DWR 2024). CEC staff used a conservative approach in conducting the LESA analysis for the gen-tie ROW and laydown area by including the 0.5-acre underground segment within Solano County, as well as the acreage for both gen-tie route options (i.e., Underground Route Option #1

5 The LESA model's scoring thresholds are grouped by total score: 0 to 39 points (not significant), 40 to 59 points (significant if both LE and SA sub-scores are at least 20 points), 60 to 79 points (significant unless either LE or SA sub-score is less than 20 points), 80 to 100 points (significant).

and Option #2). As the project would construct only one underground route option, the acreage calculations used in the LESA analysis assume a larger acreage of conversion in the City of Vacaville than would actually occur during construction of the gen-tie. The results of CEC staff's analysis are as follows:

- LE score of 18.5
- SA score of 22.8
- Total score of 41.3

According to the LESA model scoring thresholds, a project with a total score between 40 and 59 points would be considered a significant conversion of agricultural lands if both the Land Evaluation (LE) and Site Assessment (SA) sub-scores are 20 points or more. As the LE score for the gen-tie ROW is less than 20, the project's conversion of Important Farmland within the City of Vacaville would not be a significant impact.

Agricultural Mitigation Plan. As explained above, the results of the LESA analysis determined that the conversion of Important Farmland within unincorporated Solano County would be significant, while the conversion of Important Farmland within the City of Vacaville would not be significant.

CEQA Guidelines section 15064(b)(1) provides an agency with discretion to select a methodology to determine if a project has potential significant effects. In this case, CEC staff separated out the LESA analysis to reflect two distinct jurisdictions, the City of Vacaville and Solano County, which each have different planning and zoning approaches to agricultural resources within their jurisdictions. As noted, the City of Vacaville has already rezoned the Important Farmland within the gen-tie ROW and laydown area to allow for future non-agricultural development while Solano County has zoned the area to be used for the BESS as exclusive agriculture (A-40). In addition to the different zoning classifications, each jurisdiction has adopted different agricultural mitigation program requirements. Given these differences, CEC staff concludes it is appropriate and more accurate to evaluate the conversion of Important Farmland within the City of Vacaville separate from staff's analysis of Important Farmland conversion in Solano County.

This approach allows for refined application of mitigation based on local requirements and current zoning while ensuring all impacts are considered and mitigated. The approach also takes advantage of the LESA's quantitative functionality to more precisely measure impacts from two distinct project features.

Solano County, through its agricultural mitigation ordinance, recognizes that some farmland conversion will happen as part of projects benefiting the County.

> "The ordinance intends to address the balance of protecting farmland…against other critical public goods…In some cases, the conversion of farmland to other uses…may be in the best interest of the people of Solano County. In some circumstances, it may be appropriate to allow the conversion of farmland but also to require that such

conversion be accompanied by mitigation that provides increased protection for other comparable agricultural lands." (Solano County Ordinance 2024-1858)

To address the significant conversion of Important Farmland within Solano County, the applicant prepared an agricultural mitigation plan that proposes a mitigation ratio of 3:1, consistent with the Solano County Agricultural Mitigation Program requirements (TT 2025l). The applicant has entered into an agreement with Solano Land Trust (SLT) to identify and secure eligible parcels within Solano County for an agricultural conservation easement. In its agreement with the applicant, SLT recommends that the agricultural mitigation requirements developed for this project reflect the 3:1 mitigation ratio required by Solano County's Agricultural Mitigation Program (TT 2025l). As described in subsection 5.8.1, the County's Agricultural Mitigation Program applies to conversions of DOC-designated Important Farmland that are at least 20 acres in size and requires the agricultural easement to be located within the same agricultural region as the converted land (SC 2024a).

Agricultural conservation easements at a ratio of 3:1 provide substitute resources and preserve existing agricultural land consistent with CEQA Guidelines section 15370(e) and are a type of compensatory mitigation for the conversion of agricultural land. To ensure the mitigation has a close nexus to the impacts, the mitigation easement would be located in the same county as the impacted Farmland (i.e., Solano County). This ensures the preserved farmland has the ability to grow similar crops as the land lost to the project.

While the County's mitigation program sets a 3:1 mitigation ratio when a project converts Farmland of a certain quality to non-agricultural use, CEC staff independently analyzed whether the 3:1 mitigation ratio would, for the Corby project, mitigate the impacts from agricultural land loss. Under the County's Agricultural Mitigation Program, qualifying "agricultural mitigation lands" must satisfy the following criteria to ensure that these lands are considered high quality and productive (SC 2024a; SC 2024b):

- Land must consist of an FMMP classification that is substantially equivalent or better;
- Land must be considered viable for continued agricultural operations and use;
- Land must have adequate water supply available for continued agricultural operations and use;
- Land must not already be included in any form of conservation; and
- Land must be located within an unincorporated area of Solano County.

The Farmland that would be converted by the proposed project site is not currently used for agricultural operations and was first recorded as fallow by the DOC in 2022 (CEC 2026f). The DOC will consider changes to the Important Farmland designations for land that has been fallow or non-irrigated for up to four years prior to the DOC's next FMMP dataset update. CEC staff has confirmed with DOC that any change to the project site's Important Farmland designations would not occur before the 2026 FMMP

update cycle (CEC 2026f). DOC expects to begin the 2024 FMMP update cycle during the second quarter of 2026 and the 2026 update cycle in 2028 (CEC 2026f). While the designation will not be changed until 2028, the proposed project site has not been cultivated in four years.

In this case, given the small number of acres at issue, the four year fallow status of the project site, the mid-level LESA score, and the permanent protection of three acres for every one lost, CEC staff concurs that the County's 3:1 mitigation ratio and the strict requirements for high quality and productive agricultural mitigation land is sufficient to reduce the impacts below significance. This is especially so as a 3:1 ratio provides for a mechanism to slow the development of agricultural lands within the County by requiring a larger acreage of productive agricultural land to be subject to permanent conservation easements. The agricultural conservation easements would be protected from future development as they would be held in perpetuity by SLT.

CEC staff recommends Condition of Certification (COC) **LAND-1**, which requires the project owner to mitigate for the conversion of 40.8 acres of Important Farmland within Solano County to non-agricultural use at a ratio of 3:1 (i.e., 122.4 acres). The 40.8 acres of Important Farmland include the 40.3-acre BESS facility site and the 0.5-acre segment of the underground gen-tie ROW located within unincorporated Solano County. The requirements for COC **LAND-1** are based on (1) similar conditions of certification used on other CEC siting projects where agricultural land was converted to non-agricultural use; (2) Solano County's Agricultural Mitigation Program requirements; and (3) coordination with SLT.[6] CEC staff concludes that with the adoption and implementation of COC **LAND-1**, the significant Important Farmland conversion impact.

b. Would the project conflict with existing zoning for agricultural use, or a Williamson Act contract?

Construction and Operation

Less Than Significant with Mitigation Incorporated. The portions of the project that would be constructed within a Solano County agricultural zone include:

- The proposed BESS facility located within an Exclusive Agriculture A-40 zoning district,
- A 400-foot-long underground segment of the proposed gen-tie line located within an Exclusive Agriculture A-40 zoning district, and

6 Staff met with SLT on January 27, 2026, to discuss agricultural mitigation requirements for the proposed project. SLT recommended that the project's agricultural mitigation should have no restrictions on the types of crops permitted within the agricultural easement. SLT further explained that the project's agricultural mitigation should not be "stacked" with other conservation mitigation, which could limit the types of crops permitted within the easement to accommodate habitat requirements for a particular wildlife species.

- The four transmission structures at PG&E's Vaca-Dixon Substation located within an Exclusive Agriculture A-20 zoning district.

The remainder of the project, which includes the gen-tie ROW and gen-tie laydown area, would be located across non-agricultural zones in the City of Vacaville (i.e., Business Park, Residential High Density). There are no lands currently enrolled in a Williamson Act contract within the proposed BESS site or gen-tie ROW.

The purpose of the Solano County agricultural zoning districts is to preserve agriculture (e.g., Important Farmland) and to promote agricultural-related uses (SC 2025b). Per Solano County Code Section 28.21.20, utility facilities or infrastructure are compatible within A-20 and A-40 zoning districts, and therefore the project's gen-tie line and transmission structures would not conflict with the County's agricultural zoning. However, the proposed BESS facility would conflict with the County's A-40 zoning designation as it would convert Important Farmland to non-agricultural use. As discussed in subsection 5.8.2.2 part (a) above, the acreage of Important Farmland conversion is significant, and staff recommends COC **LAND-1** to mitigate this conversion at a ratio of 3:1 consistent with the County's Agricultural Mitigation Program requirements for Farmland conversion. COC **LAND-1** requires a 122.4-acre agricultural easement to be established within Solano County. As the intent of the County's A-40 zoning designation at the BESS site is to protect Important Farmland, the impact resulting from the project's conflict with this agricultural zoning would be reduced to less than significant with the application of COC **LAND-1**. No further mitigation is required to address the project's conflict with existing zoning for agricultural use.

c. Would the project involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?

Construction

Less Than Significant Impact. As shown in **Figure 5.8-1**, the project site is surrounded by DOC-designated Important Farmland. Impacts would occur if project activities convert adjacent Farmland to non-agricultural use. The proposed BESS facility, excluding of peripherals discussed below, would be confined to one 40.3-acre parcel, and the facility's construction laydown areas would be located within this 40.3-acre site (TT 2025b). The BESS facility would have a setback of over 100 feet from the property line (CEC 2026b), which would ensure that project construction activities would not encroach on adjacent properties or otherwise contribute to a conversion of adjacent Farmland to non-agricultural use.

The proposed gen-tie ROW would be sited across Important Farmland in both unincorporated Solano County and the City of Vacaville. The underground gen-tie segment, with a ROW width varying between 30 feet to 50 feet, would traverse the perimeter of two parcels along Kilkenny Road (APN 0141-010-030 and APN 0141-030-080). According to the project application, the location of the underground ROW along

each parcel's perimeter would allow the property owners to maintain use of the remaining parcel area that is outside of the proposed ROW (TT 2024c). While construction of the underground gen-tie would remove existing orchards within the ROW as discussed in subsection 5.8.2.2 part (a), the project would not remove orchards outside of the ROW. Construction of the underground gen-tie would not convert adjacent Farmland outside of the ROW to non-agricultural use.

The overhead gen-tie ROW (width of 220 feet) and gen-tie laydown area would occupy two parcels (APN 0133-060-010 and APN 0133-060-020) that are adjacent to PG&E's 500-kV transmission corridor. Construction of the overhead gen-tie and fiber optic cable pathway would remove existing orchards within these parcels, resulting in the conversion of Important Farmland discussed in subsection 5.8.2.2 part (a). Construction activities would remain within the proposed ROW and laydown area and would not remove crops or interfere with ongoing agricultural activities at the surrounding parcels (TT 2025b). Construction of the overhead gen-tie and fiber optic cable pathway would not convert Farmland outside of the ROW and laydown area to non-agricultural use.

In summary, the BESS facility setbacks would ensure that the project does not disturb adjacent Farmland. Construction of the gen-tie line and fiber optic cable pathway would not disturb Farmland outside of the ROW and laydown area. Project construction would not contribute to changes in the environment that would convert Farmland outside of the project site or gen-tie ROW to non-agricultural use. No impact to Farmland outside of the project site would occur during project construction.

Operation

Project operations would remain within the project's footprint and would not disturb adjacent Farmland. Overall, the project would not result in conversion of farmland outside the project site boundary to non-agricultural use. Farmland conversion is caused primarily by urbanization; other chief causes for the loss of farmland include development of low-density rural residences and ecological restoration projects, such as wetlands and wildlife habitat. The project does not fall into any of these categories and would not result in any new infrastructure that could promote growth or remove development barriers.

Concern has been raised that if a BESS unit were to catch fire, emissions from the fire could contaminate nearby Farmland potentially causing the Farmland to go out of production. CEC staff conducted an analysis of potential damage to crops in the event of a fire at the Corby BESS facility, which is presented in **Appendix LU, Deposition of Metals During a BESS Fire**. The analysis identified the typical background levels of lithium and aluminum in agricultural soils, which ranges from 15 to 30 milligrams of lithium per kilogram of soil (mg/kg soil) and 10,000 to 80,000 mg aluminum/kg soil. In the event of a BESS fire, the maximum soil deposition for each metal was calculated to be approximately 0.18 mg lithium/kg soil and 0.034 mg aluminum/kg soil. Assuming maximum soil deposition for lithium and aluminum would occur during a BESS fire, the analysis determined that the levels of deposition for each metal would be a small

fraction of the natural background levels that exist within agricultural soils in Solano County (see **Appendix LU, Deposition of Metals During a BESS Fire**). Therefore, CEC staff concludes that impacts to Farmland outside of the project site would be less than significant during project operation.

d. Would the project preclude access to an established land use?

Construction and Operation

Less Than Significant Impact. The proposed BESS facility would be confined to one parcel that is currently uncultivated agricultural land and contains no residences, streets, or community amenities. The BESS facility would be bordered on all sides by active agricultural uses, with one residence located adjacent to the project site across Kilkenny Road to the north. An additional four residences would be located within 0.25 miles of the BESS facility (see Table 5.8-2).

The gen-tie ROW and laydown area would be sited across portions of five additional parcels, with an option to construct a portion of the gen-tie within Kilkenny Road. Four of these parcels are actively maintained as orchards within unincorporated Solano County and the City of Vacaville, and the fifth parcel contains the Vaca-Dixon Substation within unincorporated Solano County. The proposed gen-tie ROW would be within or adjacent to other existing ROWs (i.e., Kilkenny Road and an existing PG&E's 500-kV transmission corridor).

During construction, the proposed laydown areas for the BESS facility would be located within the 40.3-acre BESS site (TT 2025b). The access roads to the BESS facility would be located along Byrnes Road and would be at least 0.2 miles away from the nearest private driveway to the north and south of the project site. No public or private driveways along Byrnes Road would be impeded during project construction or operation. None of the laydown or construction areas within the BESS site would preclude access to existing land uses surrounding the site.

The laydown area for the gen-tie line would be adjacent to the proposed gen-tie ROW (TT 2025b). Construction of the underground gen-tie segment would require temporary lane closures along Kilkenny Road that would range from two weeks up to 10 weeks, depending on the underground gen-tie route option that is constructed (TT 2024a). If Underground Route Option #2 is selected, a segment of Kilkenny Road would be fully closed to through traffic for up to 10 weeks (TT 2024a). However, the applicant has stated that local access would continue to be maintained for the residences along Kilkenny Road throughout any temporary road closures (TT 2024a). To prevent access disruptions for local land uses, the applicant would develop and implement a Construction Traffic Management Plan (COC **TRANS-1**) that would include requirements for maintaining access to private land uses and for emergency vehicles. See **Section 5.14, Transportation**, for the full discussion of these issues. There would be no additional impacts associated with access preclusion that would require mitigation. Impacts would be less than significant.

e. Would the project cause a significant environmental impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Land use plans and policies that would be applicable to the project include Solano County's General Plan and Municipal Code, and the City of Vacaville's General Plan and Municipal Code. As discussed below, potential conflicts with a land use plan, policy, or regulation would be less than significant following the implementation of staff recommended COC **AG-1**. Further detail on the project's conformance with applicable land use LORS is provided in subsection 5.8.3, **Table 5.8-4**.

- **Solano County.** The Solano County General Plan includes policies to direct growth towards cities and to preserve agriculture. Relevant policies listed in **Table 5.8-4** recommend that new land uses avoid conflicts with existing agriculture (Policies LU.P-28 and AG.P-28) while also requiring mitigation for DOC-designated Farmland conversion (Policy AG.P-4). Per Solano County Ordinance No. ZT-25-02, a BESS facility would be a prohibited use within the County's agricultural zoning districts.

As discussed under subsection 5.8.2.2 parts (a) and (b), the County's Agricultural Mitigation Program requires mitigation for Important Farmland conversion at a ratio of up to 3:1 (County Ordinance No. 2024-1858) (SC 2024a). As further discussed under subsection 5.8.2.2, COC **LAND-1** and the applicant's agreement with Solano Land Trust incorporate the requirements of the County's Agricultural Mitigation Program. Implementation of COC **LAND-1** would require the project to be consistent with the County's mitigation policies regarding Important Farmland conversion. As the intent of the BESS facility's agricultural zoning designation is to protect Important Farmland, the impact resulting from the project's conflict with the County's zoning regulations would be considered a less-than-significant impact with the application of COC **LAND-1**. No further mitigation is required to address the project's conflict with a land use plan, policy, or regulation adopted for the purpose of mitigating an environmental effect.

Under the CEC's authority set forth in Public Resources Code section 25545.1(b)(1) the issuance of a certificate by the CEC supersedes any applicable statute, ordinance, or regulation of any state, local or regional agency. Thus, certification of the project would authorize the construction and operations of the facility and supersede any inconsistency with local zoning.

City of Vacaville. The City of Vacaville General Plan includes goals and policies for guiding new development within the City's identified growth areas. A 230-kV gen-tie line would be constructed across three parcels within the City's Northeast Growth Area that contain DOC-designated Important Farmland and have a City of Vacaville zoning designation of Business Park and Residential High Density. Relevant policies listed in **Table 5.8-4** encourage development to be concentrated within the City's Urban

Growth Boundary (Policies LU-P5.1 and LU-P5.4) while also requiring mitigation for Farmland conversion within the Urban Growth Boundary (Policy LU-P2.4). Goals and policies specific to the Northeast Growth Area promote future growth that is orderly, well-planned, and balanced (Goal LU-20), and require new development to be consistent with the City's future specific plan for the Northeast Growth Area (Policy LU-P20.5). To date, the City has not issued a Northeast Growth Area Specific Plan.

As discussed under subsection 5.8.2.2 part (c) above, the project's gen-tie ROW would be constructed within or adjacent to existing ROWs (i.e., Kilkenny Road, PG&E's 500-kV transmission corridor). The applicant has stated that it has coordinated with the property owners along Kilkenny Road (APN 0141-010-030 and APN 0141-030-080) to site the ROW along the perimeter of each parcel in order to accommodate future development outside of the ROW (TT 2024c).

The segment of the gen-tie ROW that occupies two parcels as it extends north from Kilkenny Road towards the Vaca-Dixon Substation would be sited adjacent to PG&E's existing 500-kV transmission corridor. By locating the proposed project's gen-tie ROW adjacent to an existing transmission corridor, the project would avoid introducing a crisscross pattern of transmission infrastructure that could limit future development. The proposed location of the project's gen-tie ROW would maximize the availability of parcels outside out of the ROW for future development, which supports the City's goals to provide for orderly and well-planned growth in the Northeast Growth Area. Therefore, the project would not be in conflict with the City's policies for development within its growth areas. Further, issuance of a certification by the CEC authorizes the construction and operation of the project linears (e.g., gen-tie lines).

As discussed under subsection 5.8.2.2 parts (a) and (b) above, staff used the LESA Model to evaluate the level of significance of Important Farmland conversion in the City of Vacaville. Per the results of the LESA analysis, staff determined that the conversion of 21 acres of Important Farmland would not be significant (see subsection 5.8.2.2 part (a)). Staff is aware that the City's Land Use Policy LU-P2.4 requires a 1:1 mitigation ratio for Farmland conversion. However, given the LESA analysis determination that the conversion of Important Farmland would not be significant, additional mitigation is not necessary for project-related Important Farmland conversion in the City of Vacaville. The project would not cause a significant impact due to a conflict with the City's land use plans, policies, or regulations adopted for the purpose of mitigating an environmental effect.

5.8.2.3 Cumulative Impacts

Less Than Significant with Mitigation Incorporated. A cumulative impact to agriculture and land use would occur if:

- The total affected acreage or conversion of Farmland from the proposed project in combination with other projects would be cumulatively considerable;

- The activities of the proposed project would overlap with the construction or operation of another project in the Land Use Study Area, resulting in a combined preclusion of, or restriction of access to, an established land use that may be equal to, or more severe than, the effects of the proposed project alone; or
- The proposed project would combine with another project to cause a significant cumulative impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect.

Convert Farmland to non-agricultural use. As described in **Table 5.8-3** and analyzed in subsection 5.8.2.2 part (a), the proposed project would convert 40.8 acres of Important Farmland in unincorporated Solano County and 21.0 acres of Important Farmland in the City of Vacaville. Staff reviewed the locations of the cumulative projects listed in **Table A-1** and determined that the following would be constructed on DOC-designated Important Farmland: Map Nos. 2, 15, 17, 31-33, 61, 64, 111, 128, and 152. Similar to the proposed project, construction and operation of these other cumulative projects would convert Important Farmland to non-agricultural use. The majority of the aforementioned cumulative projects are associated with master planning efforts and targeted growth areas identified under Solano County, City of Vacaville, and City of Dixon general plan and specific plan documents. As discussed in Appendix A, the long-range planning documents for these local jurisdictions have acknowledged cumulative impacts associated with future growth and development, including anticipated conversion of Important Farmland. As such, the cumulative effect on Important Farmland conversion from planned community development has been evaluated by the local jurisdictions responsible for permitting these development projects. However, given that the proposed project's conversion of Important Farmland was determined to be a significant impact, the combined Farmland conversion impact from the proposed project and the cumulative projects would be cumulatively considerable. CEC staff recommends COC **LAND-1** to mitigate the proposed project's impacts associated with DOC-designated Important Farmland conversion. While COC **LAND-1** would not mitigate the Farmland conversion impacts associated with other cumulative projects, each project would be subject to the Agricultural Mitigation Program requirements applicable to that jurisdiction. With implementation of COC **LAND-1**, the proposed project's contribution to the cumulative Important Farmland conversion impacts would be less than significant.

Involve other changes in the existing environment which could result in conversion of Farmland to non-agricultural use. As discussed in subsection 5.8.2.2 part (c), the proposed project would be designed with setbacks and constructed in a manner that would not disturb Farmland outside of the ROW and laydown area. Normal project operations would remain within the proposed project's footprint and would not disturb adjacent Farmland. If a BESS fire were to occur during project operation, the maximum deposition of metals on adjacent agricultural soils was determined to be a small fraction of the natural background levels of these metals (see **Appendix LU, Deposition of Metals During a BESS Fire**). Other cumulative projects include the proposed Vaca Dixon Power Center Project, which would be a

smaller BESS facility than the proposed project (i.e., 157 MW). Given the fewer battery systems at the Vaca Dixon Power Center Project, a potential BESS fire at this site would not create a greater impact to surrounding agricultural soils from deposition of metals than the proposed project. Cumulative impacts to agricultural soils from these two BESS projects would continue to be less than significant. Further, both BESS projects are designed with multiple safety and fire prevention systems to avoid a fire starting or propagating to a thermal runaway event. Neither construction nor operation of the proposed project is expected to combine with the effects of other projects to create a cumulative impact to adjacent Farmland.

Conflict with zoning for agricultural use. As discussed in subsection 5.8.2.2 part (b), the proposed BESS facility would conflict with the project site's A-40 zoning designation, which is intended to protect Important Farmland. CEC staff recommends COC **LAND-1**, which would mitigate for the significant conversion of Important Farmland, and consequently reduce the impacts from the project's conflict with the zoning intended to protect Important Farmland to a less than significant level. Staff reviewed the list of cumulative projects and determined that, with the exception of the Vaca Dixon Power Center Project, each of the projects would be subject to the permitting review of the local jurisdiction responsible for ensuring compliance with the site's zoning requirements, including agricultural zoning if applicable. The Vaca Dixon Power Center Project would be subject to CEC review under the Opt-In Certification Program. Staff has confirmed that the Vaca Dixon Power Center Project would be located on lands zoned by the City of Vacaville as Business Park (BP) and would not require any activities on lands zoned for agricultural use (CEC 2026g). None of the projects discussed in Appendix A would be expected to combine with the proposed project to create an agricultural zoning conflict that is cumulatively considerable. With implementation of COC **LAND-1**, cumulative impacts to agricultural zoning would be less than significant.

Preclude access to an established land use. The proposed BESS facility would be confined to one parcel, and the gen-tie route would be sited within or adjacent to existing rights-of-way. As discussed in subsection 5.8.2.2 part (d), construction of the underground gen-tie segment would require temporary lane closures along Kilkenny Road that could extend up to 10 weeks. **Appendix A, Table A-1**, lists other construction-related projects along the arterial roads surrounding the proposed project site (i.e., Vaca Dixon Power Center Project, chip seal projects along Walnut Road and Byrnes Road). If these projects were to overlap with construction of the proposed project, local residences may be affected by temporary lane closures or construction delays along multiple commute routes. As discussed in **Section 5.14, Transportation**, staff recommends COC **TRANS-1**, which would require access to be maintained to private land uses throughout project construction. With implementation of COC **TRANS-1**, the proposed project would not have the potential to combine with the construction effects from other projects to preclude access to established land uses. There would be no cumulatively considerable impact.

Cause a significant environmental impact due to a conflict with a land use plan, policy, or regulation adopted for the purpose of avoiding or mitigating an environmental effect. As discussed in subsection 5.8.2.2 part (e), the proposed BESS facility would conflict with Solano County Ordinance No. ZT-25-02 that defines BESS facilities as a prohibited use within the County's A-40 zoning district. Staff recommends COC **LAND-1**, which would satisfy the County's Agricultural Mitigation Program requirements for Farmland conversion, thereby reducing the impact resulting from a conflict with the zoning intended to protect Important Farmland to less than significant. Staff reviewed the locations of the cumulative projects listed in **Appendix A, Table A-1**, and determined that none of the projects would create a similar conflict with Solano County's policies and zoning requirements for an agricultural zoning district. With the exception of the Vaca Dixon Power Center Project, each of the cumulative projects in Table A-1 would be subject to the permitting review of the local jurisdiction responsible for ensuring compliance with the zoning regulations applicable to that site. The CEC retains authority for environmental review and certification of the Vaca Dixon Power Center Project under the Opt-In Certification Program. Staff recognizes that the Vaca Dixon Power Center Project would utilize lithium-ion battery technology (Rincon 2026), which would conflict with the City of Vacaville's BESS Ordinance that prohibits front-of-the-meter BESS facilities containing lithium-ion or other technology types with documented occurrences of thermal runaway events (City of Vacaville 2026b). To address potential impacts from siting and permitting a BESS facility that would conflict with the local jurisdiction's zoning regulations, CEC's environmental review of the Vaca Dixon Power Center Project would include staff recommended COCs that address air emissions, hazardous materials, noise and vibration, worker safety, and fire protection. The purpose of these COCs would be to reduce the environmental impacts associated with the proposed BESS facility to a less-than-significant level. With implementation of staff recommended COCs for both the proposed project and the Vaca Dixon Power Center Project, CEC staff concludes that the combined impacts from these projects due to a conflict with the local jurisdiction's zoning regulations would not be cumulatively considerable.

5.8.3 Project Conformance with Applicable LORS

Table 5.8-4 below provides a discussion of CEC staff's determination of conformance with applicable state and local LORS, including application of any proposed COCs, where applicable.

TABLE 5.8-4 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Consistency and Basis For Determination
State	
California Water Code, Division 11: Irrigation Districts Section 22257: Each district shall establish equitable rules for the distribution and use of water, which shall be printed in convenient form for distribution in the district.	**Yes.** Option one of the proposed gen-tie ROW would require the applicant to obtain an easement to cross under a Solano Irrigation District (SID) canal from SID. The applicant stated that it is continuing attempts to coordinate with SID regarding the easement for the SID canal along Kilkenny Road (TT 2024a). The issuance of an

TABLE 5.8-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Consistency and Basis For Determination**
Solano Irrigation District (SID) Rules and Regulations Section 3081 Encroachments: No trees, vines, shrubs, corrals, fences, buildings, bridges, or any other type of encroachment shall be planted or placed in, on, over, or across any District Facility; or the ROWs including secondary easements therefore except pursuant to specific written authority of the [SID] Water and Power Operations Manager. Any such encroachment of an unusual or extraordinary nature shall be approved by the [SID] Board. SID Standard Conditions: An encroachment permit shall be subject to SID Standard Conditions that include, but are not limited to, the following: Before starting any construction activities, the permittee shall provide a 48-hour notice by contacting SID's Engineering Department. The permittee must receive an acceptance reply from the Engineering Department prior to beginning the work. The permittee shall notify Underground Services Alert, by phoning 811 or through their website (www.usan.org) at least two days prior to any earthwork activities, as required by CA Government Code 4216.2.(b) and shall also comply with all other Regional Notification Center System requirements as set forth in CA Government Code section 4216 and following. Promptly upon completion of construction, the SID ROWs and facilities shall be returned to their original pre-encroachment condition, except for modifications expressly authorized by the permit. Upon completion of all work within SID's ROW, permittee shall furnish As-Built drawings to SID showing the location and details of construction. The drawings must include the permitted works, SID facilities and SID ROWs. Failure to submit As-Built plans within sixty (60) days of completion will result in the revocation of this permit.	easement to cross SID facilities is outside of the authority of the CEC (TT 2026h). Consequently, construction of the proposed project cannot commence until SID has authorized the proposed gen-tie route's canal crossing. If the applicant selects option 1 as the route for the gen-tie, staff recommends COC **AG-2** to ensure that the applicant secures an SID easement or similar property right for all project work within SID's ROW. With the adoption and implementation of COC **AG-2**, the project would be consistent with the California Water Code and SID's Rules and Regulations pertaining to canal crossings.
Local	
Solano County	
General Plan Policy LU.P-28: Locate and develop industrial uses in a manner that does not conflict with adjacent and surrounding agricultural activities and protects water quality and marshland and wetland habitats.	**Yes.** The proposed BESS facility would have a setback of over 100 feet from the property line, which would ensure that project construction and operation activities would not interfere or otherwise conflict with adjacent properties. The underground gen-tie segment would be sited along the perimeter of two parcels to allow the property owners to

TABLE 5.8-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Consistency and Basis For Determination**
	maintain use of the remaining parcel area that is outside of the proposed ROW (TT 2024c). Construction and operation of the gen-tie would remain within the ROW and laydown area and would not interfere with ongoing agricultural activities at the surrounding parcels (TT 2025b). COCs to protect water quality and riparian habitat are discussed in **Section 5.2, Biological Resources**, and **Section 5.16, Water Resources**. The project would be consistent with this policy.
General Plan Policy AG.P-4: Require farmland conversion mitigation for either of the following actions: a. a General Plan amendment that changes the designation of any land from an agricultural to a nonagricultural use or b. an application for a development permit that changes the use of land from production agriculture to a nonagricultural use, regardless of the General Plan designation.	**Yes.** Construction and operation of the BESS facility and gen-tie convert 40.8 acres of Solano County land that is designated as Important Farmland by the DOC and zoned by Solano County as agriculture. The project would permanently convert this acreage to non-agricultural use. Staff recommends COC **LAND-1**, which requires the project owner to mitigate for the conversion of 40.8 acres of Important Farmland to non-agricultural use at a ratio of 3:1. The mitigation requirements for COC **LAND-1** are consistent with the Solano County Agricultural Mitigation Program requirements. With the adoption and implementation of COC **LAND-1**, the project would be consistent with this policy.
General Plan Policy AG.P-28: Recognize that agriculture is to be the predominant land use in the Dixon Ridge, Elmira and Maine Prairie, Montezuma Hills, Ryer Island, and Winters regions. These are agricultural areas where preservation efforts should be focused and conflicting land uses avoided.	**Yes.** The applicant has entered into an agreement with Solano Land Trust (SLT) to identify and secure eligible parcels for an agricultural conservation easement per the requirements of COC **LAND-1** (TT 2025l). In its agreement with the applicant, SLT has stated that it would search for an available location for the mitigation easement in the same agricultural regions as the proposed project site (i.e., Elmira and Maine Prairie, and Pleasants, Vaca, and Lagoon Valleys). If sufficient acreage for the mitigation easement cannot be secured within these agricultural regions, SLT would consider locations within the Jepson Prairie region or within designated Agricultural Reserve Overlay areas (TT 2025l). With the adoption and implementation of COC **LAND-1**, the project would be consistent with this policy.
County Ordinance No. 2024-1858: Establishes the County's Agricultural Mitigation Program and requires farmland-conversion mitigation. The Program sets mitigation ratios of 3:1 for conversion of Prime Farmland, Farmland of Statewide Importance, Unique Farmland, and Farmland of Local Importance, and requires mitigation at the highest applicable ratio for parcels with mixed FMMP classifications. For conversions of 20 acres or more, mitigation generally must be satisfied through an Agricultural	**Yes.** The project would permanently convert 40.8 acres of DOC-designated Important Farmland within Solano County to non-agricultural use. Staff recommends COC **LAND-1**, which requires the project owner to mitigate for the conversion at a ratio of 3:1. The mitigation requirements for COC **LAND-1** are consistent with the Solano County Agricultural Mitigation Program requirements. The applicant has entered into an agreement with SLT to identify and secure the agricultural easement, and SLT has stated that it would search for an available

TABLE 5.8-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Consistency and Basis For Determination**
Conservation Easement in the Agricultural Reserve Overlay or the same Agricultural Region (with step-down options to other unincorporated areas or in-lieu/alternative mitigation after documented Good Faith Efforts).	location for the mitigation easement in the same agricultural regions as the project site (TT 2025l). With the adoption and implementation of COC **LAND-1**, the project would be consistent with this ordinance.
County Ordinance No. ZT-25-02: Amended Chapter 28 of the Solano County Code to identify BESS as an allowable use within Manufacturing and Industrial zones, subject to a use permit. Front-of-the-meter BESS is prohibited within the following zoning districts: Agricultural, Rural Residential, Residential-Traditional Community, Commercial, Watershed and Conservation, Marsh Preservation, and Park.	**No.** The proposed BESS facility would be constructed on a 40.3-acre parcel in unincorporated Solano County that is designated and zoned for agriculture (Exclusive Agricultural [A-40]). The project would not conform with County Ordinance No. ZT-25-02 that prohibits BESS facilities within the County's A-40 zoning district. Under the CEC's authority set forth in Public Resources Code section 25545.1(b)(1) the issuance of a certificate by the CEC supersedes any appliable statute, ordinance, or regulation of any state, local or regional agency. Thus, certification of the project would authorize the construction and operations of the facility despite any inconsistency with local zoning.
City of Vacaville	
General Plan Policy LU-P2.4: Require that development on any Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (as classified by the California Department of Conservation) purchase conservation easements to permanently protect agricultural land of equal or greater value at a ratio of 1 acre of conserved agricultural land per 1 acre of developed agricultural land. City Ordinance No. 1942: Establishes the City's Agricultural and Avian Foraging Habitat Mitigation Program. The Program requires mitigation at a ratio of 1:1 for any development that would convert Prime Farmland, Farmland of Statewide Importance, or Unique Farmland (as classified by the DOC). The Program establishes requirements for the location and characteristics of the agricultural mitigation land, as well as the use of in-lieu fees to satisfy mitigation requirements.	**No.** The intent of this policy is to protect Farmland from conversion to non-agricultural uses. As discussed in subsection 5.8.2.2 part (a), the 21 acres within the gen-tie ROW contain Important Farmland. The conversion of Important Farmlands in the gen-tie ROW would not be consistent with this policy. However, staff used the LESA Model to evaluate the significance of the conversion of this Important Farmland. Based on the results of the LESA analysis, the conversion of 21 acres would not be significant and thus mitigation that specifically addresses Policy LU-P2.4 and Ordinance No. 1942 is not necessary. Consistent with General Plan Policy LU-P2.4, Ordinance No. 1942 seeks to protect Farmland from conversion to non-agricultural uses. The City of Vacaville's Policy LU-P2.4 to mitigate Important Farmland conversion at a 1:1 ratio was included in the City's 2015 General Plan Update (City of Vacaville 2013; City of Vacaville 2015b). The 2015 General Plan Update replaced the land use designations from the 1990 General Plan, which included re-designating over 2,600 acres of Important Farmland to non-agricultural uses (City of Vacaville 2013; City of Vacaville 2024c). Under the 2015 General Plan Update, the 21 acres within the gen-tie ROW were re-designated from an agricultural use to Business Park and Residential High Density (City of Vacaville 2013; City of

TABLE 5.8-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Consistency and Basis For Determination**
	Vacaville 2024c). In addition, the 2015 General Plan Update EIR concluded that under General Plan Policy LU-P2.4, any Farmland conversion that could occur as a result of future development within these new land use designations of Business Park and Residential High Density would be analyzed and mitigated on a project-by-project basis (City of Vacaville 2013). To a certain degree, these various policies and zoning provisions are somewhat in conflict with each other in that some of the polices encourage future growth by redesignating Farmland to non-agricultural zones, and others require 1:1 mitigation in those same zones for Farmland conversion. Thus, although the conversion of Farmland within the gent-tie ROW is not consistent with the City's 1:1 agricultural mitigation policy and ordinance, the proposed project is consistent with the City's intention to develop the agricultural lands that were designated as Business Park and Residential High Density under the 2015 General Plan Update. As discussed in subsection 5.8.2.2 part (e), inconsistency with the City's agricultural mitigation policy is not considered a significant impact.
General Plan Goal LU-20: Provide for orderly, well-planned, and balanced growth in the Northeast Growth Area. General Plan Policies LU-P5.1 and LU-P5.4: Establish and maintain an Urban Growth Boundary so that urban development within the City's land use jurisdiction will be focused within the Urban Growth Boundary and the land outside the Urban Growth Boundary within the City's land use jurisdiction will be maintained primarily for agriculture, park, open space, public facility, and utility uses until March 1, 2028.	**Yes.** The proposed gen-tie would be constructed within or adjacent to existing rights-of-way that traverse three parcels within the City's Northeast Growth Area. To accommodate future development outside of the ROW, the underground gen-tie line would be sited along the parcel's perimeter (APN 0141-010-030), and the overhead gen-tie line would be sited adjacent to PG&E's 500-kV transmission corridor (TT 2024c). The proposed location of the project's gen-tie ROW would maximize the availability of parcels outside out of the ROW for future development, which supports the City's goals to provide for orderly and well-planned growth in the Northeast Growth Area. The project would be consistent with this goal and policies.
General Plan Policy LU-P20.1: The Northeast Growth Area shall primarily be developed with job generating uses such as high quality offices, industrial uses, and technology campuses. Encourage the development of employment generating uses prior to residential uses in the Northeast Growth Area.	**Yes.** The proposed location of the project's gen-tie ROW along Kilkenny Road and adjacent to the PG&E 500-kV transmission corridor would maximize the availability of parcels outside out of the ROW for future development of employment generating uses. Construction and operation of the gen-tie ROW would not prevent future development of offices, industrial uses, or technology campuses within the Northeast Growth Area. The project would be consistent with this goal and policies.
General Plan Policy LU-P20.5: One comprehensive infrastructure master plan shall be prepared for	**Yes.** The City of Vacaville has not prepared a comprehensive infrastructure master plan or specific

TABLE 5.8-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Consistency and Basis For Determination**
the Northeast Growth Area prior to development in this area to ensure coordinated planning for infrastructure, public facilities, and public services.	plan for the Northeast Growth Area. However, the proposed location of the project's gen-tie ROW would maximize the availability of parcels outside out of the ROW for future development, which supports the City's goals to provide for orderly and well-planned growth in the Northeast Growth Area. The project would be consistent with this policy.
City BESS Ordinance: The City's BESS ordinance identifies certain types of front-of-the-meter BESS facilities as a conditionally permitted use in PF, IP, and BP zoning districts.	**Yes.** The proposed BESS facility would be located entirely within unincorporated Solano County. The only project components that would be located within the City of Vacaville are the gen-tie line (underground and overhead), fiber optic cable pathway, and temporary laydown area. The proposed project would not construct a BESS facility within the City of Vacaville and therefore would be consistent with this ordinance.
City Municipal Code Title 14 (Land Use and Development Code) Code Section 14.12.040.100: An encroachment permit shall be required to do any construction or repair work within the City ROW, or on any City or redevelopment agency owned property.	**Yes.** City Code Section 14.12.040.100 sets forth the requirements for an encroachment permit for any work in the public ROW, including excavation for utility infrastructure. Underground Route Option 2 would install the gen-tie within Kilkenny Road, which is a City-maintained ROW. Under the CEC's authority set forth in Public Resources Code section 25545.1(b)(1), the issuance of a certificate by the CEC for a site and related facility is in lieu of any permit, certificate, or similar document required by any state, local or regional agency. Thus, the City's encroachment permit would be subsumed in the CEC certification, and the City would not be issuing a separate encroachment permit. If the project receives a certification, the project owner would be authorized to place its transmission line in the Kilkenny Road ROW consistent with the City's public ROW construction requirements. Staff recommends COC **LAND-3** to ensure that project work within the City's ROW is consistent with the requirements of Municipal Code Section 14.12.040.100. With the adoption and implementation of COC **LAND-3**, the project would be consistent with the City's permit requirements.

5.8.4 Conclusions and Recommendations

As discussed in subsection 5.8.2.2, the proposed project would convert Important Farmland to non-agricultural use in Solano County and in the City of Vacaville. The results of the LESA analysis determined that the conversion of Important Farmland within unincorporated Solano County would be significant, while the conversion of Important Farmland within the City of Vacaville would not be significant. CEC staff recommends COC **LAND-1** to satisfy Solano County's Agricultural Mitigation Program requirements for Farmland conversion.

Neither construction nor operation of the project would disturb adjacent Farmland or result in the conversion of Farmland outside of the project site.

The proposed BESS facility would conflict with Solano County's A-40 zoning designation for the project site. As COC **LAND-1** would mitigate the proposed project's conversion of Important Farmland, the impact resulting from the project's conflict with zoning intended to protect Important Farmland also would be considered less than significant.

Construction of the gen-tie would require temporary lane closures along Kilkenny Road for up to 10 weeks. However, with implementation of COC **TRANS-1** (see **Section 5.14, Transportation**) local access would continue to be maintained for residences along Kilkenny Road throughout project construction. Construction and operation of the project would not preclude access to established land uses within the surrounding community. To ensure that construction and operation of the gen-tie is consistent with SID Rules and Regulations for encroachment permits and with the City of Vacaville encroachment permit requirements, CEC staff recommends COC **LAND-2** and COC **LAND-3**.

As discussed in subsection 5.8.2.3, the project would contribute to a cumulative impact to Important Farmland conversion and a combined conflict with a local jurisdiction's ordinance for siting and permitting BESS facilities. Implementation of COC **LAND-1** would mitigate the proposed project's contribution to a cumulative Farmland conversion impact. Staff recognizes that the Vaca Dixon Power Center Project would create a conflict with local land use plans, policies, and regulations that is similar to the proposed project. As part of CEC's environmental review under the Opt-In Certification Program, staff would recommend COCs specific to the Vaca Dixon Power Center Project that would address the environmental impacts associated with the BESS facility. With implementation of staff recommended COCs for both the proposed project and the Vaca Dixon Power Center Project, CEC staff concludes that the combined impacts from these projects due to a conflict with the local jurisdiction's zoning regulations would not be cumulatively considerable.

Under the CEC's authority set forth in Public Resources Code section 25545.1(b)(1) the issuance of a certificate by the CEC supersedes any appliable statute, ordinance, or regulation of any state, local or regional agency. Thus, certification of the project would authorize the construction and operations of the facility despite any inconsistency with local zoning.

5.8.5 Proposed Conditions of Certification

The following proposed COCs would ensure conformance with land use plans, policies, and regulations, where applicable.

LAND-1 Prior to any ground-disturbing activity, the project owner shall execute an agreement with Solano Land Trust (SLT) to establish an agricultural conservation easement for a minimum of 122.4 acres of Department of Conservation (DOC)-

designated Important Farmland within Solano County. The 122.4-acre agricultural easement shall consist of DOC-designated Prime Farmland, Farmland of Statewide Importance, or Unique Farmland, or a combination of these Important Farmland types. The 122.4-acre agricultural easement shall not be stacked with other conservation mitigation requirements, such as Swainson's hawk mitigation, if the other conservation mitigation requirements would limit the types of crops permitted within the agricultural easement.

The project owner's agreement with SLT shall identify a suitable location for the 122.4-acre agricultural easement within one of the following Solano County agricultural regions: Elmira/Maine Prairie or Pleasants/Vaca/Lagoon Valleys. If SLT cannot secure a location for the easement in these regions, SLT shall locate the agricultural easement within the Jepson Prairie agricultural region or within designated Agricultural Reserve Overlay areas within Solano County.

Verification: At least 30 days prior to the start of construction activities, the project owner shall provide documentation that identifies the location, acreage, and recorded legal instruments establishing all required agricultural conservation easements to the compliance project manager (CPM). No ground-disturbing activities may commence until the CPM has been provided written confirmation that the agricultural mitigation requirements have been met.

LAND-2 Prior to the start of construction activities for the option #1 linear alignment within Solano Irrigation District's (SID) irrigation canal right-of-way (ROW), if selected, the project owner shall obtain an easement or similar property right as required from SID and shall comply with the terms of the easement during the construction and operations of the project.

Verification: At least 30 days prior to the start of construction activities within Solano Irrigation District's (SID) right-of-way (ROW), the project owner shall provide a copy of the approved SID easement to the compliance project manager (CPM) and to the Delegate Chief Building Official (DCBO). Prior to initiating any project-related work within the SID ROW, the project owner shall also provide the CPM/DCBO with proof of any notice required in the terms of the easement.

LAND-3 Prior to any ground disturbance, improvements, or obstruction of traffic within the City of Vacaville's right-of-way (ROW), the project owner shall prepare an Improvement Plan for the proposed project work within the City's ROW, consistent with the requirements identified in the City's Municipal Code Section 14.12.040.100 (Encroachment Permits). The project owner shall coordinate with the City's Director of Public Works to determine the requirements and level of detail for the Improvement Plan that are necessary for the City's encroachment permit.

Verification: At least 30 days prior to the start of construction activities, the project owner shall provide encroachment permit documentation to the compliance

project manager (CPM) and to the Delegate Chief Building Official (DCBO) to issue an encroachment permit for project work within Kilkenny Road. The encroachment permit documentation shall include an Improvement Plan and proof of the project owner's coordination with the City of Vacaville Director of Public Works to determine the City's requirements and level of detail for the Improvement Plan. No project work may commence in the City's ROW until the CPM/DCBO has approved the encroachment permit documentation.

5.8.6 Recommended Mitigation Measures

There are no recommended mitigation measures for land use and agriculture.

5.8.7 References

CEC 2024b – California Energy Commission (TN 259949). RECEIPT OF OPT-IN APPLICATION. Docketed November 7, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2024e – California Energy Commission (TN 260568). Determination of Incomplete Application and Request for Information for the Corby Battery Energy Storage System Project. Docketed December 9, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2026b – California Energy Commission (TN 268258). Project Description Update #2, Part 1. Docketed January 16, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2026f – California Energy Commission (TN 270087). ROC California Department of Conservation. Docketed May 19, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2026g – California Energy Commission (TN 268621). Determination of Incomplete Application and Request for Information for the Vaca Dixon Power Center (VDPC) Project (26-OPT-01). Docketed February 13, 2023. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=26-OPT-01

City of Vacaville 2013 – City of Vacaville. City of Vacaville General Plan Update Draft Environmental Impact Report. Dated October 25, 2013. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-other/general-plan-and-ecas-eir-documents

City of Vacaville 2015a – City of Vacaville. City of Vacaville General Plan. Adopted August 11, 2015. Accessed on April 15, 2025. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents

City of Vacaville 2015b – City of Vacaville. Resolution No. 2015-074. Resolution of the City Council of the City of Vacaville Certifying the EIR for the Vacaville General Plan Update and Adopting the Vacaville General Plan Update. Dated August 11, 2015. Accessed online at:

https://www.cityofvacaville.gov/home/showpublisheddocument/5542/638856859098930000

City of Vacaville 2019 – City of Vacaville. Ordinance 1942. Agricultural and Avian Foraging Habitat Impact Mitigation Program. City of Vacaville Municipal Code Title 14, Chapter 14.28.001. Adopted April 9, 2019. Accessed online at: https://ecode360.com/48417294#48417294

City of Vacaville 2024a – City of Vacaville. Staff Report. Agenda Item No. 6D. Dated June 11, 2024. Accessed on June 17, 2025. Accessed online at: https://vacaville.granicus.com/MetaViewer.php?view_id=3&clip_id=1959&meta_id=111809

City of Vacaville 2024b – City of Vacaville. City Council Meeting. Dated June 25, 2024. Accessed online at: https://vacaville.granicus.com/player/clip/1963?view_id=5&meta_id=112008&redirect=true

City of Vacaville 2024c – City of Vacaville. 2024 Annual Progress Report: City of Vacaville General Plan. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/other-regulatory-items/annual-status-of-general-plan

City of Vacaville 2025 – City of Vacaville. City of Vacaville Planning and Development: Battery Energy Storage Systems. Accessed on February 9, 2026. Accessed online at: https://www.cityofvacaville.gov/residents/talk-of-the-town/battery-energy-storage-systems

City of Vacaville 2026a – City of Vacaville. Vacaville Planning Commission Meeting. Dated January 20, 2026. Accessed online at: https://www.cityofvacaville.gov/government/agendas-and-minutes

City of Vacaville 2026b – City of Vacaville. Vacaville City Council Meeting. Dated March 10, 2026. Accessed online at: https://www.cityofvacaville.gov/government/agendas-and-minutes

DOC 1997 – California Department of Conservation. California Agricultural Land Evaluation and Site Assessment Model (Instruction Manual). Accessed online at: http://www.conservation.ca.gov/dlrp/Pages/qh_lesa.aspx

DOC 2018 – California Department of Conservation. 2016-2018 California Farmland Conversion Report. Accessed online at: https://www.conservation.ca.gov/dlrp/fmmp/Documents/fmmp/pubs/2016-2018/FCR/FCR_1618_Report.pdf

DOC 2022a – California Department of Conservation. California Williamson Act Enrollment Finder, dated December 2022. Accessed April 15, 2025. Accessed online at: https://maps.conservation.ca.gov/dlrp/WilliamsonAct/

DOC 2022b – California Department of Conservation. California Important Farmland Finder. Solano County Important Farmland data, last updated 2022. Accessed April 15, 2025. Accessed online at: https://maps.conservation.ca.gov/DLRP/CIFF/

DOC 2023 – California Department of Conservation. Farmland Mapping and Monitoring Program: Laws and Policy. Accessed April 15, 2025. Accessed online at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/Laws-and-Policy.aspx

DOC 2024 – California Department of Conservation. Important Farmland Categories, dated December 2024. Accessed April 15, 2025. Accessed online at: https://www.conservation.ca.gov/dlrp/fmmp/Pages/Important-Farmland-Categories.aspx

DOC 2025 – California Department of Conservation. DLRP (Division of Land Resource Protection) Data Downloads. Accessed January 2026. Accessed online at: https://gis.conservation.ca.gov/portal/home/group.html?id=b1494c705cb34d01acf78f4927a75b8f#overview

DWR 2024 – California Department of Water Resources. California Department of Water Resources Land Use Viewer. Provisional Statewide Crop Mapping 2024. Accessed online at: https://gis.water.ca.gov/app/CADWRLandUseViewer/?page=home

ESRI 2026 – ArcGIS Online basemaps

Google Earth Pro 2025 – Google Earth Pro. Version 7.3.6.10441 (64-bit)

NEE 2026 – NextEra Energy Resources, LLC. Corby Project Features. Dated February 3, 2026

NRCS 2025 – USDA Natural Resources Conservation Service. Web Soil Survey. Solano County Data Survey Area Version 20. Dated September 3, 2025. Accessed online at: https://websoilsurvey.nrcs.usda.gov/app/

Rincon 2026 – Rincon Consultants (TN 268145). Chapter 2_Project Description_VDPC, dated January 6, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=26-OPT-01

SC 2008 – County of Solano. County of Solano General Plan. Adopted November 4, 2008. Accessed June 3, 2025. Accessed online at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=6492

SC 2024a – County of Solano. Ordinance No. 2024-1858. Agricultural Mitigation Program. Adopted November 5, 2024. Accessed online at: https://www.codepublishing.com/CA/SolanoCounty/html/ords/1858.pdf

SC 2024b – County of Solano. Board of Supervisors Final Agenda. Agenda #26, File #24-786. Dated October 22, 2024. Accessed online at: https://solano.legistar.com/LegislationDetail.aspx?ID=6899181&GUID=A5AFE77F-EACE-451C-9FCA-A698C68C7BFB

SC 2025a – County of Solano (TN 267642). 2025_11_19 Corby BESS NOP Comment Letter County of Solano. Docketed November 19, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

SC 2025b – County of Solano. Solano County Unincorporated Zoning. Updated April 18, 2025. Accessed online at: https://solanocountygis.com/portal/home/item.html?id=7228aa75ce184989a71eda8c13c3c35a

SC 2025c – County of Solano. Ordinance No. ZT-25-02. Adopted November 4, 2025. Accessed online at: https://solano.legistar.com/LegislationDetail.aspx?From=RSS&ID=7721294&GUID=CB9D0596-8A34-4846-8F80-532CCC440401&FullText=1

SID 2025 – Solano Irrigation District. Encroachment Permit – Standard Conditions. Dated June 17, 2025. Accessed online at: https://www.sidwater.org/244/Encroachment-Permit

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024f – Tetra Tech (TN 259883). Volume 2 App 4-2 Agriculture & Forestry Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024j – Tetra Tech (TN 259887). Volume 2 App 1 Executive Summary Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025b – Tetra Tech (TN 262555). Data Request Response #1. Docketed April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025c – Tetra Tech (TN 262632). Application Section 2 Project Description Redline. Docketed April 9, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025l – Tetra Tech (TN 265885). Data Request Response #3. Docketed September 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026h – Tetra Tech (TN 269192). Data Request Response #5. Docketed September 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Appendix LU

Assessment of Metal Deposition on Agricultural Soils from a Hypothetical BESS Fire

Appendix LU: Assessment of Metal Deposition on Agricultural Soils from a Hypothetical BESS Fire

The possibility of a BESS fire depositing contaminants on agricultural land is a concern to the agricultural community in the nearby vicinity of the proposed project. During any fire involving a building, a vehicle, or wildland, there is some deposition of particulates in areas below the fire plume. This could elevate the level of contaminants deposited on the ground that could pose an environmental risk, such as to agricultural crops, dependent upon the nature of the contaminants. For lithium-iron-phosphate (LFP) BESS units such as those proposed for the Corby project, the primary contaminants of interest in potential soil deposition are lithium and aluminum, which is assessed below.

Soil sampling has an advantage over air sampling because once contaminants deposit on the ground, the contaminants tend to remain in place unless rain or other disturbances occur. In contrast, air sampling can only capture the level of contaminants during an incident. Although BESS fires emit particulate matter primarily in the range of 13 to 349 microns **[1]**, few studies exist where soil samples have been collected and analyzed. Historical incidents where fires have occurred and sampling of soils has taken place (e.g., wildland-urban interface fire) allows for an estimate of the potential impacts of deposition. These studies have demonstrated that the majority of the contaminants deposited are metals, inorganic compounds, and semi-volatile organic compounds. The volatile organic compounds do not deposit on the ground.

Staff reviewed and discussed three studies of soil samples related to the January 2025 Moss Landing BESS fire in depth in **Appendix D** of the SA. The studies differed in results. Moreover, the studies are not representative of a fire at the proposed Corby facility because the Moss Landing fire involved a large number of Lithium Nickel Manganese Cobalt (NMC) BESS units that burned together with a building enclosing the BESS units, so the plume contained contaminants from a structure fire and a BESS fire. The Moss Landing fire is not representative of a single-unit LFP BESS fire. However, it can indicate the potential for soil deposition in a different type of BESS unit fire. The three studies may be summarized as follows:

Cahn **[2]** examined the deposition of metals from six sample sites closest to the battery fire location (1.30 to 1.83 miles away).It found a slight deposition of copper and manganese may have occurred in one agricultural field, but the increases measured in the surface samples were likely insignificant relative to normal background levels for these soil types. Other sites showed no increase in heavy metals on the soil surface.

Terraphase **[3]** also conducted soil sampling for the same event from 27 locations, examining metals, pH, polycyclic aromatic hydrocarbons (PAH), dioxins, and furans. The analysis concluded that all concentrations of battery-related metals in soil identified were within the range of background concentrations presented in established studies that define regional background concentrations in California soils.

Scientists at San Jose State University Marine Lab **[4]** examined surface deposition of metals in the estuary around the Moss Landing incident (a few kilometers from the incident). The study conflicts with the other two studies mentioned above because it found a "*significant but transient surface enrichment of nickel (Ni), manganese (Mn), and cobalt (Co).*" However, subsurface (greater than 5 mm deep) samples showed no increase.

AERMOD modeling for the Corby project addressed a potential fire incident (see **Appendix D**, Section 2.3). Staff used the AERMOD dry particle deposition analysis model to estimate the amount of particle deposition to the ground that could occur during a fire incident. These AERMOD modeling results were used in the assessment below.

Staff determined that the best way to assess possible damage to crops would be to follow the methodology prescribed by California Department of Toxic Substances Control (DTSC) (February 1997 **[5]**:

> The simplest method for identifying metals as COPC [chemical of potential concern] involves comparison of the highest concentration detected at the site (**CMAX**) with a concentration representing the upper range of ambient conditions. If **CMAX** does not exceed this value, then the metal is excluded as a COPC. If it does, the metal is carried forward into the risk assessment as a COPC. The value representing the upper range of ambient conditions may be estimated parametrically (i.e. making use of the underlying shape of the distribution) in most cases; or non-parametrically (no assumption about the underlying distribution).

To do so, the following steps were taken:

1. Determine the natural background levels of Lithium and Aluminum in the area of Solano County located near the facility.
2. Identify the crops in question.
3. Determine if a particular crop absorbs lithium or aluminum from the soil and moves it to the product (almonds, walnuts, plums, and grapes) via translocation.
4. Estimate the deposition of lithium and aluminum on surface soils (defined as up to 1 cm deep) using an air dispersion model.
5. Calculate the estimated concentration of lithium and aluminum in the surface soil using an average soil bulk density of 1.30 g/cm3 (surface) to 1.45 g/cm3 (deeper subsoil).

Each of these steps is summarized in the following text.

1 Natural Background Levels of Lithium and Aluminum

Lithium commonly occurs in small, but measurable, concentrations in both soils and plants. USGS 1973 **[6]** found that concentrations of lithium in 912 samples of soils throughout the United States were obtained and analyzed for lithium. The geometric mean lithium concentration is 20.4 mg/kg for all samples, 17.3 mg/kg for samples from the Eastern United States, and 23.3 mg/kg for samples from the Western United States. Levels in Solano County range from 15 mg/kg to 30 mg/kg. These concentrations reflect typical baseline levels for Western U.S. surficial materials and are generally safe, posing no immediate toxicity risks to common agricultural crops, native plants, or human health.

Although lithium is not generally considered essential to plant nutrition, low concentrations are reported to stimulate plant growth in recent studies. High concentrations of lithium, especially the carbonate form, are toxic to plants. While low levels may be harmless, lithium is highly toxic to almonds at elevated concentrations, often causing leaf burn, defoliation, and reduced yields.

Aluminum is the most abundant metal in the earth's crust, with natural background levels ranging from 10,000 to 80,000 mg/kg. These naturally occurring concentrations are tightly linked to the composition of local bedrock and clay-rich sedimentary soils and concentrations at this magnitude are ubiquitous across California, including Solano County. Potential ecological risks associated with aluminum in soils is identified based on the measured soil pH. Only soils with a pH less than 5.5 would allow for aluminum to be a threat to agriculture **[7]**.

2 Identify the Crops in Question

Staff found that almonds are grown in the specific area near the proposed site with some walnuts, plums, and grapes grown in locals several hundred feet to several miles away. Air dispersion studies show that particulates from a BESS fire deposit very near the unit, within a few hundred feet, thus not impacting any known areas where other crops are grown.

3 Uptake Into Almond, Walnut, and Stone Fruit Trees

Lithium

- Absorption and Mobility: Almond roots take up dissolved lithium ions passively alongside water and essential minerals like potassium. Once inside the plant, it travels through the vascular system and primarily accumulates in the leaves rather than the nuts.
- Toxicity Thresholds: Almond trees are highly sensitive to lithium, with sensitivity levels that closely parallel their sodium tolerance. While a formal maximum threshold for almonds is not universally standardized, research indicates that irrigation water containing 0.5 mg/l or more can induce toxicity.

- Symptoms of Excess: High lithium levels interfere with metabolic processes and photosynthetic efficiency. Visual symptoms typically present as marginal leaf necrosis (leaf burn, with margins turning yellow and then brown), tip dieback, and premature leaf drop, which directly hinders carbohydrate accumulation and yield potential.
- Lithium (Li) uptake in walnut trees also involves the passive transport of lithium ions from the soil through the roots, utilizing the same non-selective cation channels (NSCCs) that transport potassium and sodium. While trace amounts are benign, walnuts are generally considered Li excluders, protecting themselves by limiting translocation.
- Translocation: Studies tracking heavy metal and trace element movement show that walnut trees predominantly restrict lithium movement, keeping much of the absorbed element bound in the roots rather than transferring it to the leaves and nuts.
- Trace Accumulation: Despite this restriction mechanism, walnuts contain measurable trace amounts of lithium in their nut meats, naturally falling into the (0.1 to 0.3 mg) per kilogram range (depending on soil composition and water availability).

Lithium Uptake Into Stone Fruit Trees. Lithium uptake in stone fruit trees (e.g., peaches, cherries, plums) occurs passively through the root system, as it is non-essential and mimics potassium. While low levels are harmless, stone fruits are highly sensitive to lithium. Excess lithium easily triggers phytotoxicity, leading to marginal leaf necrosis, premature defoliation, and reduced fruit yields.

- Mechanism: Lithium shares chemical properties with potassium and is taken up via the same low-affinity cation transporters and ion channels.
- Mobility: It is highly mobile in the soil and translocates rapidly through the xylem, where it accumulates mostly in the leaves rather than the fruit or wood.
- Distribution: In affected stone fruits, more than 85% of the lithium often localizes in the mature leaves, causing significant stress on the tree's photosynthetic capacity.
- Stone fruit trees—similar to citrus—are extremely intolerant of lithium.
- Soil Levels: Water-soluble lithium in soils exceeding (0.5 to 1.0 ppm) can result in injury.
- Irrigation Water: Levels as low as (0.1 ppm) in irrigation water can cause toxicity over repeated applications.
- Leaf Tissue: Leaf tissue concentrations ranging from (50 to 60 ppm) (dry weight) usually trigger visible damage, while severe leaf necrosis and defoliation occur at (75 ppm) and above.
- Signs of Stress: Symptoms typically appear late in the summer as marginal chlorosis (yellowing between veins), followed by browning and tissue death (necrosis) along the edges of the leaves.

- Edible Intake: Lithium uptake from soil into edible almond kernels is generally low. Because almond trees have adapted to exclude heavy metals and certain non-essential trace elements, lithium naturally prefers to stay in the roots and leaves rather than translocating into the nut meat.

Managing Lithium Exposure. If lithium toxicity is suspected, the following agricultural practices can help mitigate the damage:

- Soil Leaching: Because lithium is highly mobile, thoroughly flushing the soil with low-lithium, high-quality irrigation water can leach the element below the root zone.
- Potassium Application: Applying supplemental potassium (e.g., potassium sulfate) can help competitively inhibit lithium uptake, as the roots will prioritize the essential nutrient over the toxic element.
- Water Testing: Routinely testing the water source is crucial.

Aluminum

- Toxicity Symptoms: High levels of aluminum restrict root cell division. This creates brittle, deformed root tips and induces physiological drought and overall stunting.
- Nutrient Blockage: Soluble aluminum binds with phosphorus in the soil, rendering it unavailable to the almond's root system. Aluminum toxicity also induces calcium and magnesium deficiencies.
- Safety in Kernels: Studies analyzing heavy metal and mineral uptake in orchards have found that aluminum concentrations in almond kernels are generally kept at very low, non-toxic levels.
- Edible Intake: The amount of toxic accumulation in edible portions is negligible, keeping human dietary ingestion of aluminum from almonds well within permissible safety ranges.

Aluminum Uptake Into Stone Fruits. Aluminum is not an essential nutrient for stone fruit trees and is only taken up in significant amounts when soils become acidic (pH < 5.0). In these acidic conditions, harmless bound aluminum transforms into toxic (Al 3+), which physically damages root tips and severely restricts the tree's ability to absorb essential macronutrients like calcium, magnesium, and phosphorus**.**

- Agricultural soils near Vacaville in Solano County generally have a pH ranging from slightly to moderately alkaline (pH 6.5 to 8.4). This mild alkalinity is typical for much of California's agricultural land.

Managing Aluminum Exposure. If soil tests indicate high levels of bioavailable aluminum, orchard managers must take steps to alter the soil chemistry:

- Lime Applications: The most effective method to neutralize soluble aluminum is applying agricultural lime (calcium carbonate) to raise the soil pH above 6.0.

- Phosphorus Starters: Applying phosphorus (P) fertilizers can help reduce free aluminum in the soil solution by forcing it to bind to the phosphorus rather than the plant's root tips.

4 Estimated Deposition onto Land

The AERMOD modeling results mentioned above estimated an upper-bound theoretical maximum deposition of lithium from a 6-hour BESS fire of 18.0 g/m^2, and for aluminum 3.4 g/m^2. [see **Appendix D,** section 6.0.] The location of this maximum deposition is at the project fence line and not in an orchard, thus representing another point of conservative health-protective assumptions used in this analysis.

5 Calculate Surface Soil Concentrations

Using the maximum soil deposition for each metal, and a soil bulk density of 1.3 grams of soil per cubic centimeter of soil, and assuming at first the deposition exists in only the top 7.6 centimeters of soil **[8]**, the levels due to the highest deposition could be **0.18 mg lithium/kg** soil or 0.18 ppm, and for aluminum, **0.034 mg aluminum/kg** soil or 0.034 ppm. The level of deposition of lithium can be compared to the natural level of 15 mg/kg to 30 mg/kg, and represents a small fraction of additional lithium added to the soil. The amount of aluminum deposited would be an extremely small amount when compared to the natural background levels that exist in all soils.

Conclusions

The maximum upper bound theoretical calculation of both lithium and aluminum that could be deposited on soils near the project if a BESS fire were to occur would be well below the natural background levels of both lithium and aluminum. Therefore, staff finds that the impact of a BESS fire on agricultural lands and crops would be *less than significant.*

References

Aiello, I.W. et al, 2025. "*Coastal wetland deposition of cathode metals from the world's largest lithium-ion battery fire.*" Nature Scientific Reports 15:42113. Available online at: https://pmc.ncbi.nlm.nih.gov/articles/PMC12658236/pdf/41598_2025_Article_25972.pdf

DTSC 1997. "*Selecting Inorganic Constituents As Chemicals Of Potential Concern At Risk Assessments At Hazardous Waste Sites And Permitted Facilities: Final Policy*". Human And Ecological Risk Division, Department Of Toxic Substances Control, California Environmental Protection Agency. February. Available Online at: https://dtsc.ca.gov/wp-content/uploads/sites/31/2021/11/Background-Feb-1997-A.pdf

International Atomic Energy Agency. (2004). IAEA-TECDOC-1415: Soil sampling for environmental contaminants. Available Online at: https://www.pub.iaea.org/MTCD/Publications/PDF/te_1415_web.pdf

McAllister, et al. 2025. "*Environmental and Health Impacts of Thermal Runaway Events in Outdoor Lithium-Ion Battery Energy Storage System Installations*." Society of Fire Protection Engineers (SFPE). June. Available Online at: https://doi.org/10.64167/3d04-pax1

Michael D Cahn and Richard F Smith. 2025, "*Evaluation of Heavy Metals in Agricultural Fields following the Moss Landing Battery Fire*." Available online at: https://ucanr.edu/blog/salinas-valley-agriculture/article/evaluation-heavy-metals-agricultural-fields-following-moss

Terraphase 2025, "*Revised Sampling Report, Vicinity of Moss Landing Power Plant, Moss Landing, California*." October 17. Available online at: https://www.readymontereycounty.org/home/showpublisheddocument/143458/638990015667570000

US EPA 2003. "*Ecological Soil Screening Level for Aluminum, Interim Final. OSWER Directive 9285.7-60*." Available online at: https://www.epa.gov/sites/default/files/2015-09/documents/eco-ssl_aluminum.pdf

USGS 1973. "USGS 1973 Lithium in Surficial Materials of the Conterminous US." Available online at: https://pubs.usgs.gov/circ/1973/0673/report.pdf

5.9 Noise and Vibration

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to noise and vibration. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In certification jurisdictional and non-jurisdictional project components.

5.9.1 Environmental Setting

Existing Conditions

As shown in **Figure 5.9-1**, the nearest municipality to the project site is the City of Vacaville, located approximately 250 feet northwest of the project parcel boundary. Land uses surrounding the 40.3-acre parcel are predominantly agricultural and rural residential, including orchards to the south, irrigated pastureland to the east and west, and dispersed rural residences to the north (TT 2024c). Land uses along the gen-tie corridor consist primarily of orchards, agricultural fields, irrigation infrastructure, and the existing Vaca-Dixon Substation. The broader area surrounding the project site is characterized by low-density rural development and active agricultural operations. Residences in the vicinity are generally spaced apart and associated with farming activities.

Noise-sensitive receptors in the vicinity of the gen-tie alignment consist of dispersed rural residences north of the main project site, including one residence (Rec01) located approximately 90 feet north of the project parcel boundary and 1,200 feet from the center of the main project site.

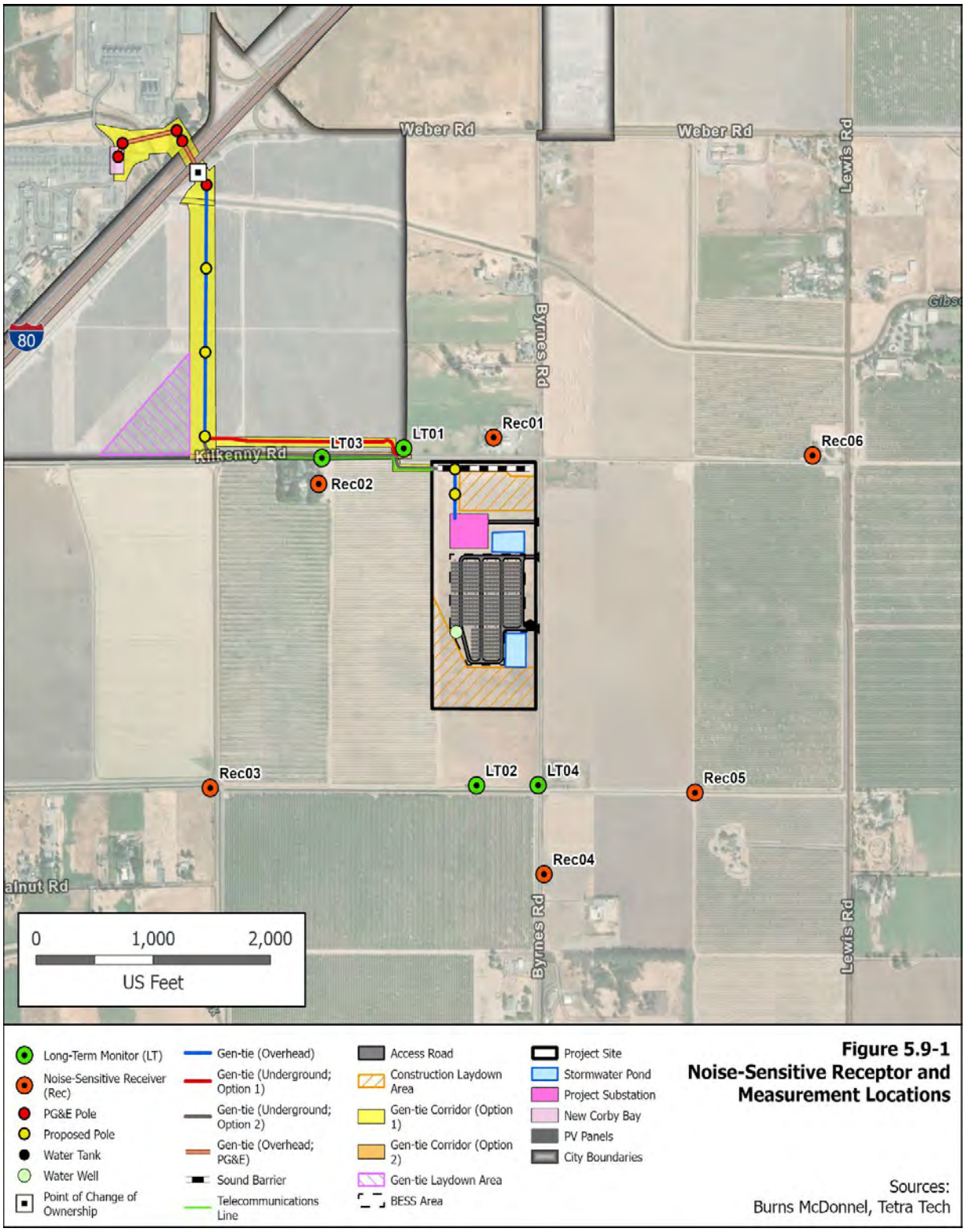
To characterize existing noise conditions, long-term sound level measurements were conducted continuously from June 13 through June 16, 2023 (TT 2024c). As shown in **Figure 5.9-1**, four unattended long-term monitoring locations (LT-01 through LT-04) were established at representative locations around the project site to capture existing ambient conditions in the surrounding rural residential and agricultural areas.

Typical ambient noise sources in the project area include light vehicular traffic on local rural roadways, operation of agricultural equipment, and occasional overhead propeller aircraft. Natural environmental sounds, such as birds, wind moving through vegetation, and distant farm animals, also contribute to the overall ambient noise environment (TT 2024c). Average ambient sound levels measured at the four monitoring locations indicate a rural noise environment influenced by agricultural activity and intermittent transportation sources. Daytime (7:00 A.M. to 10:00 P.M.) sound levels ranged from approximately 52 to 64 dBA L_{eq} across the monitoring locations, while nighttime (10:00 P.M. to 7:00 A.M.) sound levels ranged from approximately 56 to 62 dBA L_{eq}. Calculated community noise equivalent levels (CNEL) for the monitoring locations ranged from

approximately 62 to 69 dBA, reflecting the combined effects of daytime, evening, and nighttime noise conditions in the project area (TT 2024c).

Field staff recorded weather conditions during the measurement period and observed generally clear skies, moderate temperatures, and light winds. These conditions are typical for the area and are appropriate for collecting representative ambient noise measurements. Overall, the existing acoustic environment in the project vicinity is characteristic of rural agricultural areas (TT 2024q).

Figure 5.9-1 Noise-Sensitive Receptor and Measurement Locations



Regulatory

Federal

Occupational Safety and Health Act (OSHA). The Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (29 C.F.R. Section 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed, assuring that workers are made aware of overexposure to noise, and periodically testing the workers' hearing to detect any degradation.

State

Cal-OSHA. Cal-OSHA has circulated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, Section 5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards.

Local

Solano County General Plan. The Solano County General Plan, Chapter 5, Public Health and Safety includes noise goals, policies, and implementation programs. Adopted in 2008, this chapter establishes standards and policies to protect existing and future noise-sensitive land uses from excessive community noise exposure as defined in **Table 5.9-1** below (Solano County General Plan, Chapter 5, Table HS-3).

TABLE 5.9-1 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS (L_{dn} or CNEL, dBA)

Land Use	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential – Low Density Single-family, Duplex, Mobile Homes	<60	55-70	70-75	75+
Residential – Multi. Family	<65	60-70	70-75	75+
Transient Lodging – Motels, Hotels	<65	60-70	70-80	80+
Schools, Libraries, Churches, Hospitals, Nursing Homes	<70	60-70	70-80	80+
Auditoriums, Concert Halls, Amphitheaters	—	<70	65+	—
Sports Arena, Outdoor Spectator Sports	—	<75	70+	—
Playgrounds, Neighborhood Parks	<70	—	67.5-75	72.5+
Golf Courses, Riding Stables, Water Recreation, Cemeteries	<75	—	70-80	80+
Office Buildings, Business Commercial and Professional	<70	—	75+	—

TABLE 5.9-1 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS (L_{dn} or CNEL, dBA)

Land Use	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Industrial, Manufacturing, Utilities, Agriculture	<75	70-80	75+	—

Notes: dBA = A-weighted decibel; Ldn = day-night average noise level, which is the 24-hour average sound pressure level calculated with a 10 dBA penalty added to nighttime hours (7 A.M. to 10 P.M.); CNEL = community noise equivalent level, which is the 24-hour average sound pressure level calculated with a 5 dBA penalty added to hours from 7 A.M. to 10 P.M. and a 10 dBA penalty added to the hours of 10 A.M. to 7 A.M.
1 Specified land use is satisfactory, based on the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
2 New construction or development should be undertaken only after a detailed analysis of the noise-reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
3 New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design. Outdoor areas must be shielded.
4 New construction or development should generally not be undertaken.
Source: Solano County 2008.

The County identifies both transportation and non-transportation (stationary) noise sources and provides quantitative performance standards and compatibility guidelines to ensure that development does not result in adverse noise exposure at residential and other sensitive receptors. For stationary sources, the County relies on the Non-transportation Noise Standards set forth in **Table 5.9-2** (Solano County General Plan, Chapter 5, Table HS-5), which establish maximum allowable average (L_{eq}) and maximum (L_{max}) noise levels for residential and other sensitive land uses, with provisions allowing upward adjustment in 5-dBA increments where existing ambient levels exceed the base standard.

TABLE 5.9-2 NON-TRANSPORTATION NOISE STANDARDS—AVERAGE (dBA L_{eq}) / MAXIMUM (dBA L_{max})[1] NOISE

Receiving Land Use	Outdoor Area		Interior[2]	Notes
	Daytime	Nighttime	Day and Night	
All Residential	55/70	50/65	35/55	—
Transient Lodging	55/75	—	35/55	3
Hospitals and Nursing Homes	55/75	—	35/55	4, 5
Theaters and Auditoriums	—	—	30/50	5
Churches, Meeting Halls, Schools, Libraries, etc.	55/75	—	35/60	5
Office Buildings	60/75	—	45/65	5
Commercial Buildings	55/75	—	45/65	5
Playgrounds, Parks, etc.	65/75	—	—	5
Industry	60/80	—	50/70	5

Notes: Leq = equivalent or energy-averaged sound level; Lmax = the highest A-weighted sound level measured during a defined time interval.

1 The standards shall be reduced by 5 dBA for sounds consisting primarily of speech or music, and for recurring impulsive sounds. If the existing ambient noise level exceeds the standards, then the noise level standards shall be increased at 5 dBA increments to encompass the ambient.
2 Interior-noise-level standards are applied within noise-sensitive areas of the various land uses, with windows and doors in the closed positions.
3 Outdoor activity areas of transient lodging facilities are not commonly used during nighttime hours.
4 Hospitals are often noise-generating uses. The exterior-noise-level standards for hospitals are applicable only at clearly identified areas designated for outdoor relaxation by either hospital staff or patients.
5 The outdoor activity areas of these uses (if any), are not typically used during nighttime hours.
Source: Solano County 2008.

The General Plan also includes several policies that aim to protect residential and other noise-sensitive land uses from exposure to harmful or annoying noise levels. The following are General Plan policies applicable to the project:

- **Policy HS.P-90:** Consider and promote land use compatibility between noise-sensitive[1] and noise-generating land uses when reviewing new development proposals.
- **Policy HS.I-67:** When reviewing new development proposals, this policy requires the following:
  - Noise abatement measures to ensure that noise levels will not exceed those indicated in **Table 5.9-2** [HS-5].
  - Buffering between noise-sensitive land uses and noise sources unless a detailed noise analysis is conducted, and noise abatement measures can be taken to reduce noise to acceptable levels, as shown on **Table 5.9-2** [HS-5].
  - Where development projects produce, or are affected by, non-transportation-related noise, require the inclusion of project features that will enable the project to achieve acceptable levels specified in **Table 5.9-2** [HS-5], as measured at outdoor activity areas of existing and planned noise-sensitive land uses.
  - Require noise mitigation to reduce construction and other short-term noise impacts as a condition of approval for development projects by applying the performance standards outlined in **Table 5.9-2** [HS-5]. The total noise level resulting from new sources and ambient noise shall not exceed the standards in **Table 5.9-2** [HS-5], as measured at outdoor activity areas of any affected noise-sensitive land use except:
    - If the ambient noise level exceeds the standard in **Table 5.9-2** [HS-5], the standard becomes the ambient level plus 5 dB.

1 For the purposes of the General Plan Public Health and Safety Chapter and this analysis, noise-sensitive land uses include schools, hospitals, rest homes, long-term care, mental care facilities, and residences. Outdoor activity areas are considered to be the portion of a noise-sensitive property where outdoor activities would normally be expected (i.e., patios of residences and outdoor instructional areas of schools). Outdoor activity areas for the purposes of this section do not include gathering spaces alongside transportation corridors or associated public rights-of-way.

- Reduce the applicable standards in **Table 5.9-2** [HS-5] by 5 dB if they exceed the ambient level by 10 or more dB.
- Under the conditions outlined below, require acoustical studies to be prepared as part of the development review process to ensure adequate analysis of proposed development and incorporation of noise-reducing features in project designs. Acoustical studies with appropriated noise abatement measures will be required for all discretionary projects where any of the following conditions apply:
  - The project is within the existing or future 60 dB CNEL transportation noise contours as measured at outdoor activity areas of noise-sensitive land uses.
  - The project will cause future traffic volumes to exceed 5,000 average daily trips on any roadway that fronts residential, institutional, and open space land uses or will cause traffic volume to increase by 25 percent or more, on any of these roadways.
  - The project will introduce noise or vibration sources associated with mechanical equipment operations, entertainment, maintenance, and facility operations.
  - The project is a proposed residential use in the vicinity of existing and proposed commercial and industrial areas.
  - The project is proposed in an area where existing noise levels exceed acceptable levels in **Table 5.9-2** [HS-5], as measured at outdoor activity areas of noise-sensitive land uses.
  - Where it is not possible to reduce noise levels in outdoor activity areas to 60 dB or less using practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB may be allowed, provided that all available exterior noise level reduction measures have been implemented.

Solano County Ordinance, Article III (28.70.10). Solano County regulates noise primarily through zoning performance standards rather than a standalone comprehensive noise ordinance. All land uses must operate in a manner that prevents certain nuisances at property boundaries. Specifically, uses must provide adequate controls to prevent:

- Noise exceeding 65 dBA at any property line
- Dust, odors, or vibration detectable beyond the property boundary
- Glint or glare detectable beyond the property line or by overflying aircraft

City of Vacaville General Plan. The City of Vacaville General Plan Noise Element, adopted in 2015, includes guidelines for noise-compatible land use categories (City of Vacaville 2015). The guidelines include the California Land Use Compatibility Guidelines

table, which identifies ranges of noise levels for a variety of land use categories and development types and classifies them as: Normally Acceptable, Conditionally Acceptable, Normally Unacceptable, or Clearly Unacceptable. The California Land Use Compatibility Guidelines table is recreated below in **Table 5.9-3**.

The General Plan also includes several policies that aim to protect residential and other noise-sensitive land uses from exposure to harmful or annoying noise levels. The following are General Plan policies applicable to the project:

- **Policy NOI-P1.1** – Land Use Compatibility. Requires new development to be located and designed so that noise-sensitive uses are compatible with existing and projected noise levels, consistent with the City's land use compatibility guidelines.
- **Policy NOI-P2.1** – Noise Standards for New Development. Requires new projects to comply with applicable noise standards and to incorporate design features or mitigation measures as necessary to prevent significant noise impacts at sensitive receptors.
- **Policy NOI-P4.2** – Construction Noise Controls. Requires implementation of construction noise control measures, such as limiting construction hours and using properly muffled equipment, to minimize temporary noise impacts on nearby sensitive uses.

TABLE 5.9-3 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Land Use	Normally Acceptable[1] (L_{dn}[2] or CNEL[3])	Conditionally Acceptable[4] (L_{dn} or CNEL)	Normally Unacceptable[5] (L_{dn} or CNEL)	Clearly Unacceptable[6] (L_{dn} or CNEL)
Residential – Low Density Single-family, Duplex, Mobile Homes	50-60	55-70	70-75	75-85
Residential – Multi. Family	50-65	60-70	70-75	75-85
Transient Lodging – Motels, Hotels	50-65	60-70	70-80	80-85
Schools, Libraries, Churches, Hospitals, Nursing Homes	50-70	60-70	70-80	80-85
Auditoriums, Concert Halls, Amphitheaters	—	50-70	—	65-85
Sports Arena, Outdoor Spectator Sports	—	50-75	—	70-85
Playgrounds, Neighborhood Parks	50-70	—	67.5-75	72.5-85
Golf Courses, Riding Stables, Water Recreation, Cemeteries	50-75	—	70-80	80-85
Office Buildings, Business Commercial and Professional	50-70	67.5-77.5	75-85	—

TABLE 5.9-3 LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Land Use	Normally Acceptable[1] (L_{dn}[2] or CNEL[3])	Conditionally Acceptable[4] (L_{dn} or CNEL)	Normally Unacceptable[5] (L_{dn} or CNEL)	Clearly Unacceptable[6] (L_{dn} or CNEL)
Industrial, Manufacturing, Utilities, Agriculture	50-75	70-80	75-85	—

Note:
1 Normally Acceptable: Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.
2 Ldn is day-night average sound level, which is the 24-hour average sound pressure level calculated with a 10 dBA penalty added to nighttime hours (7 A.M. to 10 P.M.).
3 CNEL or Community Noise Equivalent Level, which is the 24-hour average sound pressure level calculated with a 5 dBA penalty added to hours from 7 A.M. to 10 P.M. and a 10 dBA penalty added to 10 P.M. to 7 A.M.
4 Conditionally Acceptable: New construction or development should be undertaken only after a detailed analysis of the noise reduction requirement is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.
5 Normally Unacceptable: New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
6 Clearly Unacceptable: New construction or development should generally not be undertaken.
Source: City of Vacaville 2015.

City of Vacaville Noise Ordinance, Chapter 8.10 Abatement of Public Nuisance. The City of Vacaville Municipal Code establishes regulations intended to control excessive noise and protect noise-sensitive land uses within the City. The noise ordinance includes provisions addressing exterior noise standards, measurement procedures, and exemptions for certain activities. These standards apply to noise received at residential, commercial, and other noise-sensitive land uses within the City of Vacaville (City of Vacaville 2025).

The City's exterior noise level standards for stationary noise sources are summarized in **Table 5.9-4**. These standards establish allowable noise levels at receiving properties and are used to evaluate project noise impacts from new or existing stationary noise-generating activities.

Where the measured ambient noise level exceeds the applicable noise standard, the allowable noise limit may be adjusted upward to match the existing ambient noise level, consistent with the provisions of the City's noise ordinance. In addition, the allowable noise limits may be reduced for certain types of noise, including noise containing pure tones, speech, music, or impulsive characteristics, as specified by the ordinance.

The ordinance also establishes time-of-day limitations for construction activities near residential uses. Construction activities within 500 feet of an occupied residence are generally limited to daytime hours, typically between 7:00 A.M. and dusk on weekdays and Saturdays. Construction is prohibited during nighttime hours, Sundays, and holidays to minimize disturbance to nearby residents.

The following activities are generally exempt from the City's noise ordinance provisions applicable to the project:

- Public Health, Welfare, and Safety Activities: Construction, maintenance, or repair work conducted by public agencies or utilities, or their contractors, when necessary to protect public health and safety or to restore essential public services.
- Construction Activities: Noise associated with construction activities conducted within the allowable construction hours established by the City, provided that such activities comply with applicable time-of-day restrictions and other ordinance requirements.

The City's exterior noise level standards and applicable adjustments are presented in **Table 5.9-4** below (City of Vacaville 2025).

TABLE 5.9-4 CITY OF VACAVILLE MAXIMUM NOISE EXPOSURE AND GENERATION LEVELS FOR NON-TRANSPORTATION SOURCES

Land Use Category	Noise Level Descriptor	Exterior Noise Levels		Interior Noise Levels	
		Daytime (7A.M to 10 P.M.)	Nighttime (10 P.M. to 7A.M.)	Daytime (7A.M to 10 P.M.)	Nighttime (10 P.M. to 7 A.M.)
Residential	Hourly L_{eq}, dBA	50	45	45	35
Maximum Level, dBA	70	65	–	–	–
Transient Lodging	Hourly L_{eq}, dBA	–	–	45	35
Hospitals, Nursing Homes	Hourly L_{eq}, dBA	50	45	45	35
Other	Hourly L_{eq}, dBA	–	–	–	–

Source: City of Vacaville 2025

Cumulative

Staff evaluated the projects listed in **Appendix A, Table A-1** and **Figure A-1** to determine whether any potential impact of the listed projects could combine with those of the proposed project to cause a potentially significant cumulative impact. Project 2 (Vaca Dixon Power Center Project) is the only project identified that could combine with the project to create a cumulative noise impact.

5.9.2 Environmental Impacts

NOISE AND VIBRATION	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise	☐	☒	☐	☐

NOISE AND VIBRATION	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?				
b. Would the project result in generation of excessive ground borne vibration or ground borne noise levels?	☐	☐	☒	☐
c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, noise.

5.9.2.1 Methodology and Thresholds of Significance

The construction and operation of any power plant and large industrial facilities create noise, or undesired sound. The character and loudness of this noise, the times of day or night that it occurs, and the proximity of the facility to sensitive receptors (humans) combine to determine whether the facility would meet applicable noise control laws and ordinances, and whether it would cause significant adverse environmental impacts.

In addition, vibration may be produced from construction practices, such as blasting or pile driving. The ground-borne energy of vibration has the potential to cause structural damage and annoyance to humans.

In addition to the above environmental checklist, CEC staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The California Environmental Quality Act (CEQA) Guidelines state that a project would normally be considered to have a significant impact if noise levels conflict with adopted environmental standards or plans (County's or City's noise level thresholds), or if noise levels generated by the project would substantially increase existing ambient noise levels at noise-sensitive receivers on a permanent or temporary basis.

Thresholds of Significance

Typically, an increase of 3 dBA is barely noticeable, and an increase of 5 dBA is considered to be distinct. An increase of 5 dBA is considered less than significant, particularly if the resulting noise level does not exceed an established community noise standard. Other factors, such as the frequency of occurrence of the noise, background

noise levels, noise standards, and time of day/night the noise occurs, are also commonly considered in determining if such an increase is clearly significant or not.

There are no adopted thresholds for an increase in noise levels to be considered a significant impact for construction activities. Noise due to construction activities are considered to be less than significant if the construction activity is temporary and the use of heavy equipment and noisy activities is limited to daytime hours. However, an increase of 10 dBA or more during the day can be perceived as noisy (triggering a community reaction) and warrant additional measures to address the noise levels. An increase of 10 dBA corresponds to a doubling of loudness or dBA level and is generally considered to be the starting point at which significant noise impacts may occur (triggering a community reaction). It is very difficult to identify the exact level of noise resulting from construction because it fluctuates based on many factors over the course of a week, day, or even hour. It also depends on other factors, such as duration of the noisy construction, intervening structures, land topography and land cover. For example, intervening structures block or impede sound waves, and undulating topography and land roughness would play a role in attenuating the propagation of noise waves. Therefore, performance standards (i.e., a complaint and redress process) are ultimately used as a backstop measure to address any impacts that are perceived by the community.

Solano County does not have established noise level thresholds or noise limitations for construction-generated noise. The City of Vacaville Municipal Code establishes time-of-day limitations for construction activities within 500 feet of an occupied residence. Construction is generally limited to daytime hours, typically between 7:00 A.M. and dusk on weekdays and Saturdays. Construction is prohibited during nighttime hours, Sundays, and holidays to minimize disturbance to nearby residents.

The Solano County Code establishes a noise performance standard for land uses that requires activities to be conducted so that noise generated by a use does not exceed 65 A-weighted decibels (dBA) at the property line of the receiving land use (Solano County Code Section 28.30). The Solano County Code does not establish specific exemptions for construction activities; however, construction noise is temporary and intermittent and is generally evaluated qualitatively in environmental analyses. The Vacaville Municipal Code regulates noise primarily through nuisance provisions contained in Chapter 8.10 (Abatement of Public Nuisance), which identifies excessive noise that disturbs the peace and quiet of surrounding properties as a public nuisance. However, the Vacaville noise regulations generally allow construction activities occurring within 500 feet of a residence between 7:00 A.M. and dusk on weekdays and Saturdays.

While the County Code limits stationary noise sources to 65 dBA at the property line, the General Plan establishes more stringent non-transportation operational noise standards for residential uses of 55 dBA L_{eq} during the daytime and 50 dBA L_{eq} during the nighttime (**Table 5.9-2**). If existing ambient noise levels exceed these standards, the allowable limits may be increased in 5-dBA increments to encompass ambient

conditions. Therefore, the more stringent County General Plan thresholds are applied for the operational noise impact analysis.

The California Department of Transportation's (Caltrans) Transportation and Construction Vibration Guidance Manual states that for construction activities that generate vibration, the threshold of human response is a peak particle velocity (PPV) of 0.10 inch per second (in/sec). This is characterized by Caltrans as a "strongly perceptible" event when the vibration is being generated from continuous/frequent intermittent sources (i.e., pile drivers and compactors) (Caltrans 2020). A level of 0.3 in/sec has been found to pose a risk of architectural damage to buildings. A level of 0.5 in/sec can pose a risk of architectural damage to newer residential structures and modern industrial and commercial buildings (Caltrans 2020).

Impact discussions below for construction and operation pertain to CEC's Opt-In Certification jurisdictional and non-jurisdictional project components.

5.9.2.2 Direct and Indirect Impacts

a. Would the project result in generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, noise from construction would not result in a significant impact to nearby sensitive receptors with implementation of Conditions of Certification (COCs) **NOISE-1, NOISE-2, NOISE-3, NOISE-5, NOISE-6**, and **NOISE-7**.

Construction would take approximately 14 months to complete, with groundwater well development potentially beginning one month earlier and extending the total duration of on-site activities for approximately 15 months through project commissioning. The construction phases include:

- groundwater well development
- site preparation
- grading
- BESS civil/mechanical/electrical installation
- gen-tie site preparation
- project substation installation
- gen-tie foundation/tower erection/underground installation
- gen-tie stringing and pulling
- telecommunications line installation

- onsite water tank installation
- commissioning

Construction activities would involve the use of typical heavy construction equipment that would generate temporary noise levels above existing ambient noise levels. Equipment used during various construction phases would include, but not be limited to, pile drivers, drill rigs, generators, air compressors, graders, rollers, cranes, excavators, loaders, forklifts, dozers, compactors, welders, trenchers, and water trucks. Noise levels from construction equipment would range from approximately 73 dBA L_{eq} (i.e., welders) to 104 dBA L_{eq} (i.e., pile drivers), when measured at a distance of 50 feet.

The property line of Noise-Sensitive Receptor (Rec)01, a residence, would be located approximately 90 feet from the main project site boundary and 1,200 feet from the center of the main project site as shown in **Figure 5.9-1**. The BESS containers would be placed on driven piles or concrete foundations (TT 2026g). Pile drivers could be used as close as approximately 880 feet from Rec01 and 1,500 feet from Rec02. **Figure 5.9-1** also shows that the nearest residence to gen-tie corridor construction is Rec02 and is approximately 100 feet south of Gen-Tie Option 1 and approximately 40 feet south of Gen-Tie Option 2.

Noise From Construction of BESS

The average daytime ambient noise levels are approximately 52 dBA L_{eq} at Rec01 and approximately 61 dBA L_{eq} at Rec02 (TT 2024q). Unmitigated noise from construction activities at the nearest laydown area, located approximately 250 feet from Rec01 in the northern portion of the Corby BESS site, was modeled using a representative set of construction equipment with reference noise levels ranging from 75 to 85 dBA at 50 feet. These activities would generate noise levels of up to 71.5 dBA L_{eq} at Rec01 and would result in an increase of approximately 19.5 dBA L_{eq} from existing ambient noise levels. Other unmitigated noisy construction activities at the main site (i.e., battery/container installation and substation installation) would reach up to 62 dBA L_{eq} at Rec01 and would result in an increase of approximately 10 dBA L_{eq} from existing ambient noise levels. All other phases (i.e., site preparation, grading, and substation installation) would result in unmitigated noise levels of less than 10 dBA L_{eq} above ambient at Rec01 when measured from the center of the project site.

Staff proposes COC **NOISE-6** to reduce noisy construction activities (i.e., construction laydown areas, battery/container installation and substation installation) generated at the main project site at Rec01. For noisy construction activities at the main project site reaching Rec01, reduction in construction noise can be achieved by requiring the following: (1) construction equipment is prohibited to idle for more than 5 minutes; (2) staging areas and construction laydown areas shall be located as far as feasible from Rec01; (3) electric powered equipment shall be used instead of diesel-powered equipment, whenever feasible; and (4) temporary and mobile sound barriers or screens capable of reducing the construction noise by at least 10 dBA shall be installed as close

as feasible to noisy equipment and the construction laydown areas that generate noise levels of 65 dBA or greater at Rec01. These sound barriers/screens shall break the line of site to Rec01. The measures outlined in COC **NOISE-6** would reduce construction noise from the main project site reaching Rec01 by approximately 10 dBA.

Noise from pile driving would reach up to 78 dBA L_{eq} at Rec01 and 75 dBA L_{eq} at Rec02. Pile driving activities would result in an increase above ambient noise levels of approximately 26 dBA L_{eq} at Rec01 and 16 dBA L_{eq} at Rec02. Pile drivers would be used for approximately 6 months for the construction of the BESS, project substation, and grid interconnection facilities (TT 2025a).

Additionally, staff proposes COC **NOISE-7** to ensure noise from pile driving at the main project site would not significantly increase the existing ambient noise levels at Rec01 and Rec02. As outlined in COC **NOISE-7**, this can be achieved by implementing several best management methods that are available for reducing noise and vibration generated by traditional pile driving. These methods include: (1) the use of pads or impact cushions of plywood; (2) dampened driving, which involves some form of blanket or enclosure around the hammer; (3) the use of vibratory drivers or hydraulic pile pushers instead of impact drivers; or (4) installation of a temporary barriers such as a mobile sound screen near the pile driver or other effective mitigation measures that reduce the noise and vibration impacts of pile driving. The measures outlined in COC **NOISE-7** would reduce predicted pile driving noise levels reaching Rec01 and Rec02 by approximately 20 dBA.

Noise From Construction of Gen-Tie

Unmitigated construction noise from gen-tie activities at Rec02 would reach up to 79 dBA L_{eq} (Option 1) and up to 87 dBA L_{eq} (Option 2) and would result in increases above ambient noise levels of approximately 18 dBA L_{eq} (Option 1) and 26 dBA L_{eq} (Option 2). Other activities related to the gen-tie site prep, substation installation, and gen-tie stringing phases would result in less than 10 dBA increases in noise levels experienced at Rec01 due to the distance between gen-tie construction and Rec01.

For gen-tie construction, reduction in construction noise can be achieved by installing temporary and mobile sound barriers or screens capable of reducing the gen-tie construction noise by at least 15 dBA. These sound barriers/screens should be placed as close as feasible to noisy equipment and break the line of site to Rec02.

To address additional noise impacts that might be perceived noisy by the community in the vicinity of the project site, CEC staff proposes COCs **NOISE-1, NOISE-2, NOISE-3, NOISE-5**, and **NOISE-6**. **NOISE-1** and **NOISE-2** would provide the public with notification of construction, a noise complaint and redress process, COCs **NOISE-3** and **NOISE-5** would require construction workers and employees noise protection, COC **NOISE-6** would implement construction noise restrictions, and COC **NOISE-7** would implement pile driving controls.

With implementation of COCs **NOISE-1, NOISE-2, NOISE-3, NOISE-5, NOISE-6**, and **NOISE-7**, project construction activities would not result in the generation of substantial increases in ambient noise levels in the vicinity of the project in excess of standards established in the local general plans or noise ordinances, or applicable standards of other agencies and would not create a significant adverse noise impact.

The nearest residential property boundary to the CEC Opt-In certification non-jurisdictional project components would be approximately 2,500 feet south of the PG&E gen-tie segment.

Construction activities would generate temporary noise from equipment and vehicle use. However, these activities would be short-term, intermittent, and conducted in compliance with applicable local noise ordinances, including restrictions on hours of construction. Also, the non-jurisdictional project components to be constructed by PG&E are not in close proximity to the noise sensitive receptors in the project vicinity. PG&E implements project-specific best management practices (BMPs) and avoidance and minimization measures through its Environmental Release to Construction process, which requires incorporation of environmental compliance measures, including construction-related BMPs, into project planning and field execution (PG&E 2021).

PG&E would implement standard construction BMPs, consistent with applicable City and County standards, to minimize noise. These measures would include limiting construction to permitted daytime hours, scheduling higher-noise activities during mid-day periods, using properly maintained equipment with mufflers, minimizing unnecessary idling, and locating equipment and staging areas as far as feasible from nearby receptors. Where construction would occur in close proximity to sensitive receptors, temporary noise attenuation measures would be implemented as appropriate. Given the temporary nature of construction and adherence to applicable regulations and best practices, noise impacts from non-jurisdictional project components would be less than significant, and no mitigation would be required.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, noise from operations would not result in a significant impact to nearby sensitive receptors with implementation of COC **NOISE-4**.

Operational noise levels from the proposed project were evaluated at the nearest receptor locations (Rec01 to Rec06). Based on the applicant's analysis, operational noise from the BESS equipment would attenuate with distance and would not exceed applicable Solano County stationary source noise standards at the project property line. The nearest modeled receptor used for the operational analysis (Rec01) is located approximately 1,200 feet from the center of the project site.

The Solano County Code limits stationary noise sources to 65 dBA at any property line, and the General Plan noise compatibility guidelines are intended to prevent annoyance

or sleep disturbance at sensitive land uses. The Solano County General Plan Chapter 5 establishes non-transportation noise performance standards for residential land uses of 55 dBA L_{eq} during the daytime and 50 dBA L_{eq} during the nighttime (**Table 5.9-2** above). **Table 5.9-2** further provides that if existing ambient noise levels exceed the stated standards, the applicable standard shall be increased in 5-dBA increments to encompass the ambient level (per Policy HS. I-67 of the Solano County General Plan).

Therefore, because the County General Plan noise limits are more stringent than those of the County's Noise Ordinance, even with the 5-dBA increase over ambient criterion as discussed below, CEC staff uses the County General Plan noise limits to evaluate the project's operational noise impacts at the nearby noise-sensitive receptors.

Because ambient noise levels are generally lower during nighttime hours, project-generated noise may be more perceptible and represent a conservative worst-case condition for evaluating impacts at nearby receptors. Therefore, compliance with the General Plan was evaluated by comparing the modeled operational L_{eq} levels to the applicable adjusted nighttime performance standard (TT 2024q). This approach ensures consistency between the metric used for modeling (L_{eq}) and the County's adopted performance standard, as well as reflecting the intent of the General Plan to prevent sleep disturbance and maintain compatibility between stationary noise sources and residential land uses.

Long-term monitoring conducted for the project indicates that the average nighttime (10:00 P.M. to 7:00 A.M.) ambient sound levels at all receiver locations currently exceed the base 50 dBA L_{eq} nighttime standard (56 dBA L_{eq} near Rec01 through 62 dBA L_{eq} near Rec04) (TT 2024q). Based on this ambient condition, the applicable Solano County General Plan standard allows a nighttime operational noise level of 60 dBA L_{eq} (i.e., due to the allowable increase of the County's nighttime 50 dBA L_{eq} standard in 5-dBA increments until the ambient level is captured [50 dBA + 5 dBA + 5 dBA = 60 dBA L_{eq}]) at Rec01.

The project's operational sound levels were modeled at each noise-sensitive receptor using two scenarios, without and with mitigation including a sound barrier. Under the applicant's initial modeling scenario without additional mitigation, modeled operational noise levels at the receptors nearest the project site were predicted to range from 43 to 55 dBA L_{eq}, with the highest noise level occurring at Rec01 and the lowest noise level at Rec06 (TT 2024q). Under the applicant's second scenario, which includes installation of a 15-foot-tall sound wall barrier along the northern project boundary, modeled operational noise levels would continue to be 43 dBA L_{eq} at Rec06 and would be reduced to 50 dBA L_{eq} at Rec01 (TT 2024q). Thus, modeled noise from operation of the project would be below the adjusted threshold of 60 dBA L_{eq} for both with and without the applicant-proposed sound barrier mitigation.

Based on the applicant's modeling scenario, once the project is operational, the project would result in an approximate increase of 1-2 dB L_{eq} to the average daytime and nighttime ambient noise levels at Rec01 (TT 2024q). This increase in ambient noise

levels would not be perceptible at Rec01. The project would not result in any perceptible increases to the average daytime and nighttime ambient noise levels at Rec02 to Rec06 (TT 2024q).

To ensure operational noise complies with the adjusted Solano County General Plan standard of 60 dBA L_{eq}, CEC staff proposes COC **NOISE-4** to ensure project operations occurring during nighttime hours would not distinctly increase the ambient noise levels at Rec01 and would not exceed the adjusted nighttime operational noise level standard of 60 dBA L_{eq}. This condition would require measurement and verification of operational noise at sensitive receptors to confirm compliance with applicable standards. With implementation of COC **NOISE-4**, project operations would not generate a substantial increase in ambient noise levels in excess of local or other applicable standards and would not result in a significant adverse noise impact.

As noted above, PG&E would be responsible for operation of the non-jurisdictional project components. The nearest residential property boundary would be approximately 2,500 feet south of the non-jurisdictional segment of the gen-tie. At this distance, operational noise would have no impact, and no mitigation would be required.

b. Would the project result in generation of excessive ground borne vibration or ground borne noise levels?

Construction

Less Than Significant. Based on the analysis below, construction-related vibration would not result in a significant impact to nearby structures or sensitive receptors, and no mitigation would be required.

Pile Driving activities at the BESS site would generate the highest levels of on-site project construction vibration. Gen-tie construction activities would generate the highest off-site project construction vibration. This analysis relies on the vibration thresholds identified by Caltrans to determine the significance of vibration impacts related to adverse human reactions. The threshold of human response is at a PPV of 0.10 in/sec. Caltrans characterizes this as a "Strongly Perceptible" event when the vibration is being generated from continuous/frequent intermittent sources (i.e., pile drivers and compactors) (Caltrans 2020). A level of 0.3 in/sec has been found to pose a risk of architectural damage to older residential structures. A level of 0.5 in/sec can pose a risk of architectural damage to newer residential structures and modern industrial and commercial buildings (Caltrans 2020). The estimated PPV (in/sec) levels for construction activities that would generate the highest levels of ground-borne vibration at the nearest residential structure are summarized in **Table 5.9-5**.

TABLE 5.9-5 REPRESENTATIVE VIBRATION SOURCE LEVELS FROM CONSTRUCTION ACTIVITIES

Construction activity	Distance to the nearest residential structure	PPV (in/sec) at nearest receptor	Exceeds 0.10 PPV (in/sec) threshold?
Pile Driving	880 feet away (Rec01)	0.007	No
Gen-tie construction	185 feet away (Rec02)	0.0001-0.01	No

As shown in **Table 5.9-5**, vibration from project construction activities that would generate the highest levels of ground-borne vibration would not exceed the Caltrans PPV limit of 0.10 in/sec for human response at the nearest receptors. Therefore, temporary vibration impacts from construction are expected to be less than significant.

PG&E would be responsible for construction of non-jurisdictional project components. The nearest off-site residential structure would be approximately 2,500 feet south of PG&E construction activities. At this distance, there would be no construction vibration impact to the off-site residential structure, and no mitigation would be required.

Operation

No Impact. Based on the analysis below, operations-related vibration would have no impact on nearby structures or sensitive receptors, and as a result, no mitigation would be required.

Operational components of the project would not generate perceptible vibration levels. Most equipment used for the BESS, substation, O&M activities, and gen-tie line are designed to produce no or very low vibration levels (less than the threshold of human response). Therefore, the operation of the project would not result in any substantial vibration, and no impact would occur.

The nearest off-site residential structure would be approximately 2,500 feet south of PG&E's portion of the gen-tie. At this distance, there would be no operational vibration impact to the off-site residential structure, and no mitigation would be required.

c. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?

Construction and Operation

No Impact. Based on the analysis below, the project would not expose people residing or working in the project vicinity to excessive noise levels from airport operations, and as a result, no mitigation would be required.

The nearest airport to the project site is the Nut Tree Airport, located approximately 2.9 miles southwest of the site. The airport is too far from the project site to result in the exposure of people residing or working in the project area, or areas of the non-jurisdictional project components, to excessive noise levels.

5.9.2.3 Cumulative Impacts

Construction and Operation

No Impact. Based on the analysis below, cumulative construction noise of past, present, or reasonably foreseeable projects combined with the proposed project would not result in a perceptible increase at nearby receptors, and operational and traffic noise increases would also not be perceptible. Therefore, cumulative noise impacts would not be cumulatively considerable, and no mitigation would be required.

As discussed above, Project 2 (Vaca Dixon Power Center Project) is the only project identified in **Appendix A, Table A-1** and **Figure A-1** that could combine with the project to create a cumulative noise impact. No cumulative noise impact would occur from operations; however, cumulative noise impacts could occur if construction activities overlap. The center of the Vaca Dixon Power Center Project is approximately 2,250 feet west of Rec02. At this distance, any major construction phases occurring at the Vaca Dixon Power Center Project (i.e., site preparation, grading and installation of foundations) would attenuate to below 60 dBA L_{eq}, which is below the existing average daytime noise level of 61 dBA L_{eq} at Rec02. Implementation of proposed COCs **NOISE-6** and **NOISE-7** would reduce construction noise impacts from the proposed Corby BESS at Rec02.

Once mitigated, construction noise impacts from the proposed project, and any potential overlap with construction activities at the Vaca Dixon Power Center Project, would result in cumulative noise level increases of less than 3 dBA L_{eq} at Rec02. These cumulative noise levels would not be perceptible at Rec02. Operational noise levels would be much less noisy than construction noise, thus, the cumulative noise level increase would be well below 3 dBA L_{eq} and would not be perceptible at Rec02. There are no other receptors close enough to the proposed project and the Vaca Dixon Power Center Project to be affected.

Without the projects being considered, the current average daily traffic (ADT) on Weber Road and Byrnes Road is approximately 2,475 and 1,060, respectively (TT 2024c). The Vaca Dixon Power Center Project Application (Rincon 2026) estimates project-related traffic during construction at approximately 480 ADT on each roadway, while the proposed Corby BESS would generate approximately 181 daily peak-hour trips. The combined peak-hour traffic from both projects would not be expected to double existing traffic volumes on either roadway. Thus, the average traffic noise levels would not increase by more than 3 dBA at nearby residences and there would be no nighttime traffic. Furthermore, these conditions would represent peak construction activity and would be temporary in nature. Therefore, cumulative off-site noise impacts would not

be cumulatively considerable. It is also unlikely that the noisiest peak construction activities and construction traffic levels of the proposed project and the Vaca Dixon Power Center project would occur concurrently.

5.9.3 Project Conformance with Applicable LORS

Table 5.9-6 below details CEC staff's determination of conformance with applicable local, state, and federal laws, ordinances, regulations, and standards (LORS), including any proposed COCs, where applicable, to ensure the project would conform with applicable LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the proposed project would conform with all applicable LORS. Subsection 5.9.5, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.9-6 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Occupational Health and Safety Act (OSHA) Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95	**Yes.** With incorporation of COCs **NOISE-3** and **NOISE-5** requiring an employee noise control program and occupational noise survey.
State	
Cal-OSHA Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95	**Yes.** With incorporation of COCs **NOISE-3** and **NOISE-5** requiring an employee noise control program and occupational noise survey.
Local	
Solano County General Plan, Chapter 5	**Yes.** With incorporation of COCs **NOISE-1** through **NOISE-7** requiring a noise complaint process, employee noise control program, operational noise restrictions, occupational noise survey, and construction noise restrictions, including restrictions on pile driving activities.
Solano County Ordinance, Article III (28.70.10)	**Yes.** With incorporation of COCs **NOISE-1** through **NOISE-7** requiring a noise complaint process, employee noise control program, operational noise restrictions, occupational noise survey, and construction noise restrictions, including restrictions on pile driving activities.
City of Vacaville General Plan	**Yes.** With incorporation of COCs **NOISE-1** through **NOISE-7** requiring a noise complaint process, employee noise control program, operational noise restrictions, occupational noise survey, and construction noise restrictions, including restrictions on pile driving activities.
City of Vacaville Noise Ordinance, Chapter 8.10	**Yes.** With incorporation of COCs **NOISE-1** through **NOISE-7** requiring a noise complaint process, employee noise control program, operational noise restrictions, occupational noise survey, and construction noise restrictions including restrictions on pile driving activities.

5.9.4 Conclusions and Recommendations

As discussed above, the jurisdictional project components and the non-jurisdictional project components would have a less than significant impact related to noise and vibration with the imposition of mitigation, and the jurisdictional project components would conform with applicable LORS. CEC staff recommends adopting the COCs as detailed in subsection "5.9.5 Proposed Conditions of Certification" below.

5.9.5 Proposed Conditions of Certification

The following proposed COCs include measures to both mitigate environmental impacts and ensure conformance with applicable LORS. The conditions, including verifications, below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

NOISE-1 Public Notification Process Prior to the start of ground disturbance (including gen-tie construction activities), the project owner shall notify all residences and businesses within 1 mile of the project site, by mail, or by other effective means, of the commencement and duration of project construction. The project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with construction and operation of the project. If the telephone is not staffed 24 hours a day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This or a similarly effective telephone number shall be posted at the project site during construction where it is visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

Verification: At least 15 days prior to the start of ground disturbance at the project site and ground disturbance for gen-tie construction, the project owner shall transmit to the compliance project manager (CPM) a statement, signed by the project owner's project manager, stating that the above notification has been performed, and describing the method of that notification. This communication shall also verify that the telephone number has been established and posted at the site and shall provide that telephone number.

NOISE-2 Noise Complaint Process Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints.[2] The project owner or its authorized agent shall:

2 A project-related noise complaint is a complaint about noise that is caused by the project as opposed to another source and may constitute a violation by the project of any Noise COC. A project-related noise complaint is documented by an individual or entity affected by such noise.

- use the Noise Complaint Resolution Form (shown below), or a functionally equivalent procedure acceptable to the CPM, to document and respond to the noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;
- conduct an investigation to determine the source of noise in the complaint;
- if the noise is project related, take all feasible measures to reduce the source of the noise; and
- submit the Noise Complaint Resolution Form to the CPM documenting the complaint and actions taken. The form shall include: a complaint summary, including the final results of noise reduction efforts and, if obtainable, a signed statement by the complainant that states that the noise problem has been resolved to the complainant's satisfaction.

Verification: Within five days of receiving a noise complaint, the project owner shall file with the CPM the Noise Complaint Resolution Form, that documents the resolution of the complaint. If noise control measures are required to resolve the complaint, and the complaint is not resolved within three business days, the project owner shall submit an updated Noise Complaint Resolution Form when the noise control measures are implemented.

NOISE-3 Employee Noise Control Program The project owner shall submit to the CPM for review and approval a noise control program. The noise control program shall be used to reduce employee exposure to high (above permissible) noise levels during construction in accordance with Title 8, California Code of Regulations, Sections 5095-5099, and Title 29, Code of Federal Regulations, Section 1910.95.

Verification: At least 30 days prior to the start of ground disturbance, the project owner shall submit the noise control program to the CPM. The project owner shall make the program available to Cal-OSHA upon request.

NOISE-4 Operational Noise Restrictions The project design and implementation shall include appropriate noise control measures adequate to ensure that operation of the project will not exceed the nighttime Solano County Threshold of 60 dBA L_{eq} at Rec01 during the hours of 10:00 P.M. to 7:00 A.M.

No new pure-tone components may be introduced. No single piece of equipment shall be allowed to stand out as a source of noise that draws legitimate complaints.

When the project first achieves a sustained output of 85 percent or greater of rated capacity, the project owner shall conduct a 25-hour community noise survey at Rec01. This survey during project operation shall also include measurement of one-third octave band sound pressure levels at the above

locations to ensure that no new pure-tone noise components have been introduced.

If the results from the noise survey indicate that the project noise levels (L_{eq}) at the affected receptors exceed the above value for any given hour during the survey, noise control measures shall be implemented to reduce noise to a level of compliance with this limit.

If the results from the noise survey indicate that pure tones are present, noise control measures shall be implemented to eliminate the pure tones.

Verification: The survey shall take place within 45 days of the project first achieving a sustained output that produces the highest noise level. Within 30 days after completing the survey, the project owner shall submit a summary report of the survey to the CPM. Included in the survey report will be a description of any additional noise control measures necessary to achieve compliance with the above listed noise limits, and a schedule, subject to CPM approval, for implementing these measures. When these measures are in place, the project owner shall repeat the noise survey.

Within 15 days of completion of the new survey, the project owner shall submit to the CPM a summary report of the new noise survey, performed as described above and showing compliance with this condition.

NOISE-5 Occupational Noise Survey Following the project's attainment of a sustained output that produces the highest noise level, the project owner shall conduct an occupational noise survey to identify any noise hazardous areas within the project.

The survey shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, Sections 5095-5099 and Title 29, Code of Federal Regulations, Section 1910.95(g)(3). The survey results shall be used to determine the magnitude of employee noise exposure.

The project owner shall prepare a report of the survey results and, if necessary, identify proposed hazard controls against occupational noise exposures to be employed to comply with the above regulations.

Verification: Within 30 days after completing each survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to Cal-OSHA upon request from Cal-OSHA.

NOISE-6 Construction Noise Restrictions Heavy equipment operation and noisy[3] construction work relating to any project features, including gen-tie construction, shall be restricted to the times delineated below:

Mondays through Saturdays:	7:00 A.M. to 5:00 P.M.
Sundays:	Construction not allowed

Construction work shall be performed in a manner to ensure excessive noise (noise that draws a project-related complaint) is prohibited and the potential for noise complaints is reduced as much as practicable. Haul trucks and other engine-powered equipment shall be equipped with adequate mufflers and other state-required noise attenuation devices. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust brake use (jake braking) shall be limited to emergencies.

The project owner shall reduce construction noise generated at the main project site by requiring the following: (1) construction equipment is prohibited to idle for more than 5 minutes; (2) staging areas and construction laydown areas shall be located as far as feasible from Rec01 (i.e., utilize the laydown area at the southern portion of site for loud activities); (3) electric powered equipment shall be used instead of diesel-powered equipment, whenever feasible; and (4) temporary and mobile sound barriers or screens capable of reducing the construction noise by at least 10 dBA shall be installed as close as feasible to noisy equipment and the construction laydown areas that generate noise levels of 65 dBA or greater at Rec01. These sound barriers/screens shall break the line of site to Rec01.

The project owner shall reduce gen-tie construction noise within 300 feet of Rec02 by installing temporary and mobile sound barriers or screens capable of reducing the gen-tie construction noise by at least 15 dBA. These sound barriers/screens shall be placed as close as feasible to noisy equipment and break the line of sight to Rec02.

Verification: Prior to ground disturbance, the project owner shall transmit to the CPM a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

NOISE-7 Pile Driving Noise Control The project owner shall perform pile driving activities within 1,000 feet of any residence in a manner to reduce the potential for any project-related noise and vibration complaints. The project owner shall notify Rec01, Rec02, Rec04, and Rec05 prior to start of these activities.

3 “Noisy” means noise that has the potential to cause project-related noise complaints (for the definition of “project-related noise complaint”, see the footnote in condition of certification NOISE-1)

Verification: At least 15 days prior to first pile driving, the project owner shall submit to the CPM a description of the pile driving technique to be employed, including calculations showing its projected noise impacts and peak particle velocity at sensitive receptors.

Examples of noise-reducing techniques include: (1) the use of pads or impact cushions of plywood; (2) dampened driving, which involves some form of blanket or enclosure around the hammer; (3) the use of vibratory drivers or hydraulic pile pushers instead of impact drivers; or (4) installation of a temporary barriers such as a mobile sound screen near the pile driver or other effective mitigation measures that reduce the noise and vibration impacts of pile driving.

At least 10 days prior to first production pile driving, the project owner shall notify Rec01, Rec02, Rec04, and Rec05. The notification may be in the form of letters, or other effective means, as approved by the CPM. In this notification, the project owner shall state that it will perform this activity in a manner toreduce the potential for any project-related noise and vibration complaints.

5.9.6 Recommended Mitigation Measures

There are no recommended mitigation measures for noise and vibration for the non-jurisdictional project components to be constructed and operated by PG&E.

EXHIBIT 1 – NOISE COMPLAINT RESOLUTION FORM

Corby Battery Energy Storage System (24-OPT-05)
NOISE COMPLAINT LOG NUMBER _____ Complainant's name and address: Phone number: _____
Date complaint received: _____ Time complaint received: _____
Nature of noise complaint:
Definition of problem after investigation by plant personnel: Date complainant first contacted: _____
Initial noise level at 3 feet from noise source: _____dBA Date: _____ Initial noise level at complainant's property: _____dBA Date: _____ Final noise levels at 3 feet from noise source: _____dBA Date: _____ Final noise level at complainant's property: _____dBA Date: _____
Description of corrective measures taken: Complainant's signature: _____ Date: _____
Date installation completed: _____ Date first letter sent to complainant: _____ (copy attached) Date final letter sent to complainant: _____ (copy attached)
This information is certified to be correct: Plant Manager's Signature: _____

5.9.7 References

Caltrans 2020. Transportation and Construction Vibration Guidance Manual. Accessed online at: https://dot.ca.gov/-/media/dot-media/programs/environmental-analysis/documents/env/tcvgm-apr2020-a11y.pdf

City of Vacaville 2015 – City of Vacaville. City of Vacaville General Plan. Adopted August 11, 2015. Accessed March 10, 2026. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents

City of Vacaville 2025 – City of Vacaville. City of Vacaville Municipal Code – Chapter 8.10. Accessed March 10, 2026 Accessed online at: City of Vacaville 2015a – City of Vacaville. City of Vacaville General Plan. Adopted August 11, 2015. Accessed on April 15, 2025. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents

PG&E 2021 – Pacific Gas and Electric Company. Environmental Release to Construction for Environmental Evaluations. Accessed March 31, 2026. Accessed online at: https://www.pge.com/assets/pge/docs/outages-and-safety/outage-preparedness-and-support/env-10002s.pdf

Rincon 2026 – Rincon Consultants, Inc (TN 268151). Vaca Dixon Power Center Project Opt-in Application Section 5-4 Traffic and Transportation. Accessed March 26, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=26-OPT-01

Solano County 2008 – County of Solano. County of Solano General Plan. Adopted November 4, 2008. Accessed March 10, 2026. Accessed online at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=6492

Solano County 2025 – County of Solano. Article III Land Use Regulations – Chapter 28.70.10. Accessed online at: https://www.codepublishing.com/CA/SolanoCounty/#!/html/SolanoCounty2800/SolanoCounty2803.html

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024q – Tetra Tech (TN 259898). Volume 2 App 4-13 Noise Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025a – Tetra Tech (TN 262554). Project Description Update. Dated April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026g – Tetra Tech (TN 268540). Application Section 2 Project Description markup file. Dated February 9, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

5.10 Public Health

The purpose of this Public Health analysis is to determine if toxic emissions from the project would have the potential to cause significant adverse public health impacts or violate standards for public health protection in the project area.

The toxic air contaminants addressed in this analysis are pollutants for which there are no specific ambient air quality standards. **Section 5.1, Air Quality**, separately addresses the pollutants for which there are such ambient air quality standards, known as criteria air pollutants. See **Section 5.7, Hazards, Hazardous Materials, and Wildfire**, and **Section 5.9, Noise and Vibration**, for additional analyses of human health effects.

5.10.1 Environmental Setting

Existing Conditions

Toxic Air Contaminants

California Health and Safety Code section 39655, defines a toxic air contaminant (TAC) as "an air pollutant which may cause or contribute to an increase in mortality or an increase in serious illness, or which may pose a present or potential hazard to human health." In addition, substances which have been listed as hazardous air pollutants (HAPs) pursuant to 42 U.S.C. section 7412 are included as TACs under the state law pursuant to Health and Safety Code section 39657(b). California Air Resources Board (CARB) formally identified federal HAPs as TACs in California Code of Regulations, Title 17, sections 93000 and 93001 (See OEHHA 2024).

While criteria air pollutants (such as ozone and particulate matter) are regulated based on regional ambient air quality standards, TACs are managed based on individual health risk because there are no ambient standards for most TACs. Therefore, site-specific health risk assessments need to be conducted to evaluate whether risks of exposure to TACs create an adverse impact. Specific TACs have known acute, chronic, and cancer health impacts. The nearly 200 regulated TACs include asbestos, organic, and inorganic chemical compounds and compound categories, diesel exhaust, and certain metals. The requirements of the Air Toxic "Hot Spots" Information and Assessment Act of 1987 (Health and Saf. Code, § 44300 et seq.) apply to facilities that emit these listed TACs above regulated threshold quantities.

Sensitive Receptors

The Yolo-Solano Air Quality Management District (YSAQMD) Handbook for Assessing and Mitigating Air Quality Impacts (YSAQMD 2007) defines a sensitive receptor as a location where human populations, especially children, seniors, or sick persons are found, and there is reasonable expectation of continuous human exposure according to the averaging period for the ambient air quality standards (e.g., 24-hour, 8-hour, 1-

hour). Examples of sensitive receptors include residences, hospitals, and schools. Locations of sensitive receptors may or may not correspond with the location of a source's maximum off-site concentration. The location of sensitive receptors should be explained in terms that demonstrate the relationship to the project site and the potential air quality impacts (e.g., proximity, topography, or upwind or downwind location).

The project parcel is bound on all sides by existing agricultural lands interspersed with sparse rural residences, the closest being located across Kilkenny Road directly to the north, approximately 160 feet to the project boundary and 880 feet to the closest BESS unit (TT 2025g). The nearest hospital is Kaiser Permanente Vacaville Medical Center, located approximately 1.25 miles west of the project site. The nearest school is the Academy of 21st Century Learning, located approximately 1.7 miles west of the project site.

Health Effects of TACs

The health effects associated with TACs are quite diverse and generally are assessed locally, rather than regionally. Exposure to TACs can cause serious adverse human health effects, known as injury or illness, including cancer and birth defects. Numerous other health effects also have been linked to exposure to TACs, including heart disease, sudden infant death syndrome, respiratory infections in children, lung cancer, and breast cancer (OEHHA 2015; OEHHA 2024).

The primary on-site TAC emission sources for the proposed project during construction and normal operation would be diesel engines, including engines powering the vehicles and equipment during construction and operation. Diesel exhaust is a complex mixture of gases and fine particles including over 40 substances listed by the United States Environmental Protection Agency (U.S. EPA) as HAPs and by CARB as TACs. The solid material in diesel exhaust is known as diesel particulate matter (DPM) (CARB 2024). Potential incident-related emissions, such as BESS thermal off-gassing and fire emissions, are discussed separately below.

DPM has been the accepted surrogate for whole diesel exhaust since the late 1990's. CARB identified DPM as the surrogate compound for whole diesel exhaust in its Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant staff report in April 1998 (Appendix III, Part A, Exposure Assessment) (CARB 1998). DPM is primarily composed of aggregates of spherical carbon particles coated with organic and inorganic substances. Diesel exhaust deserves attention mainly because of its ability to induce serious noncancerous effects and its status as a likely human carcinogen. Diesel exhaust is also characterized by CARB as "particulate matter from diesel-fueled engines." The impacts from human exposure would include both short- and long-term health effects. Short-term effects can include increased coughing, labored breathing, chest tightness, wheezing, and eye and nasal irritation. Effects from long-term exposure can include increased coughing, chronic bronchitis, reductions in lung function, and inflammation of the lung. Epidemiological studies strongly suggest a causal relationship

between occupational diesel exhaust exposure and lung cancer. Diesel exhaust is listed by the U.S. EPA as "likely to be carcinogenic to humans" (U.S. EPA 2002).

Naturally Occurring Asbestos

Naturally occurring asbestos may be present at sites with certain geologic conditions. This health hazard may occur at a project site in a geographic ultramafic rock unit area or an area where naturally occurring asbestos, serpentine, or ultramafic rocks are determined to be present. Based upon review of the U.S. Geological Survey map detailing natural occurrence of asbestos in California, naturally occurring asbestos is not expected to be present at the project site (Van Gosen and Clinkenbeard 2011).

Valley Fever

Soils in some areas of California host the microscopic fungus that causes Valley Fever, known as *Coccidioides immitis*, which lives in the top two to 12 inches of soil in many parts of the state. When soil is disturbed by activities such as digging, driving, or high winds, fungal spores can become airborne and potentially be inhaled. Valley Fever is a risk in Solano County, and while this disease is primarily associated with the southern San Joaquin Valley, cases are on the rise in Northern California, including Solano County (MMWR 2020). The county is considered a moderate-incidence region, with cases occurring throughout the county, making it a risk for those who live or work there. Solano County has reported active cases, with 19 cases documented in the region as of September 2025 (CDPH 2025). Workers involved in soil disturbances in Solano County should be aware of the disease, especially when dusty, hot, and dry conditions are present. In addition, employers have a legal responsibility to provide workers with protection from health risks, including any risks due to Valley Fever (DIR 2022). The primary ways to reduce the risk of Valley Fever are to avoid exposure to dusty air or dust storms, prevent dirt or dust from becoming airborne, and if working at a dusty site is unavoidable, wear respiratory protection with particulate filters rated as N95 or higher (DIR 2022).

Carbon Monoxide (CO) Hotspots

A CO hotspot refers to a localized area where CO concentrations exceed ambient air quality standards. These hotspots can occur at intersections with high peak-hour traffic volumes. Specifically, CO hotspots may be created at intersections where traffic levels are high enough to cause local CO concentrations to exceed the federal one-hour standard of 35.0 parts per million (ppm) or the federal and state eight-hour standard of 9.0 ppm. The project site is located within the Sacramento Valley Air Basin (SVAB). The SVAB is designated as in attainment/unclassified for CO with respect to both the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS).

Regulatory

Federal

Federal Clean Air Act. The federal Clean Air Act (CAA), Section 112 (42 U.S.C., § 7412) provides a Hazardous Air Pollutant (HAP) list and requires new sources that emit more than 10 tons per year of any HAP or more than 25 tons per year of any combination of HAPs to apply Maximum Achievable Control Technology.

HAPs are a variety of substances that pose serious health risks. Direct exposure to HAPs has been shown to cause cancer, reproductive effects or birth defects, damage to the brain and nervous system, and respiratory disorders. Categories of sources that cause HAP emissions are controlled through separate standards under CAA Section 112: National Emission Standards for Hazardous Air Pollutants (NESHAPs). These standards are specifically designed to reduce the potency, persistence, or potential bioaccumulation of HAPs.

Toxic Substances Control Act. The Toxic Substances Control Act (TSCA) authorizes the U.S. EPA to require testing, reporting, recordkeeping, and restrictions on new and existing chemical substances that may pose risks to human health or the environment. While authority under TSCA is primarily federal, states may administer U.S. EPA authorized programs to develop accreditation and certification programs and work practice standards for lead inspection, risk assessment, abatement, and renovation that are at least as protective as federal requirements.

Asbestos NESHAP. Asbestos is a hazardous air pollutant regulated under the NESHAP (40 C.F.R. Part 61, Subpart M). The asbestos NESHAP requires thorough inspection before demolition or renovation, notification to the delegated enforcement agency, and strict work practices (e.g., wetting asbestos-containing material, sealing in leak-tight containers, and proper disposal). These practices are designed to minimize asbestos emissions, which are linked to lung cancer, mesothelioma, and asbestosis. The project area is not located in a geologic setting with naturally occurring asbestos; therefore, asbestos is not expected to be an issue.

State

California State Health and Safety Code

Sections 39650 et seq. These sections mandated CARB and the Office of Environmental Health Hazard Assessment (OEHHA) to establish safe exposure limits for toxic air pollutants and identify pertinent best available control technologies. They also required that the New Source Review rule for the permitting of new and modified stationary sources of air pollution in each air pollution control district include regulations that require procedures for controlling the emission of toxic air contaminants.

Section 41700. This section states that “no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury,

detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property."

Air Toxic "Hot Spots" Information and Assessment Act of 1987. The Air Toxic "Hot Spots" Information and Assessment Act of 1987 (Assembly Bill 2588 [Connelly, Statutes of 1987], and codified as Health and Saf. Code, § 44300 and following), identifies TAC hot spots where emissions from specific stationary sources may expose individuals to an elevated risk of adverse health effects, particularly cancer or reproductive harm. Many TACs are also classified as HAPs. AB 2588 requires that a business or other establishment identified as a significant stationary source of toxic emissions provide the affected population with information about the health risks posed by their emissions.

Airborne Toxic Control Measures (ATCM)

Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations. CARB has adopted the Asbestos ATCM for Construction, Grading, Quarrying, and Surface Mining Operations to minimize the generation of asbestos from earth disturbance or construction activities (Cal. Code Regs., tit.17, § 93105). The Asbestos ATCM applies to any project that would include sites to be disturbed in a geographic ultramafic rock unit area or an area where naturally occurring asbestos, serpentine, or ultramafic rocks are determined to be present. Based upon review of the U.S. Geological Survey map detailing natural occurrence of asbestos in California, naturally occurring asbestos is not expected to be present at the project site (Van Gosen and Clinkenbeard 2011).

ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling. Cal. Code Regs., tit. 13, § 2485 states that the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds) during construction shall be limited to five minutes at any location.

Local

Solano County General Plan. The Solano County General Plan, adopted by the Solano County Board of Supervisors on August 5, 2008, and by the voters of Solano County on November 4, 2008, is a guide for both development and conservation within the unincorporated county through 2030 (Solano County 2008). The following goals, policy, and implementation program are applicable for the project:

- **Goal LU. G-4.** Encourage land use development patterns and circulation and transportation systems that promote health and wellness and minimize adverse effects on agriculture and natural resources, energy consumption, and air quality.
- **Goal HS. G-8.** Prioritize and support actions that foster public health for all citizens in Solano County.

- **Goal HS. G-9.** Maintain equitable and healthy air quality in Solano County through actions that avoid and minimize health risks from localized pollution sources and regional wildfire smoke.
- **Policy HS. P-86.** Minimize health impacts from sources of toxic air contaminants, both stationary (e.g., refineries, manufacturing plants) as well as mobile sources (e.g., freeways, rail yards, commercial trucking operations).
- **Implementation Program HS. I-58.** Require that when development proposals introduce new significant sources of toxic air pollutants, they prepare a health risk assessment as required under the Air Toxics "Hot Spots" Act (AB 2588, 1987) and, based on the results of the assessment, establish appropriate land use buffer zones around those areas posing substantial health risks.

YSAQMD Rules and Regulations. The following YSAQMD rules are applicable to the project:

- **Rule 2.5**. Nuisance. This rule prohibits the discharge of air contaminants or other materials in quantities that may cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public or that endanger the comfort, repose, health, or safety of any such person or the public.

City of Vacaville General Plan. A portion of the gen-tie line is within the City of Vacaville. The City of Vacaville General Plan serves as the foundational blueprint for both development and conservation within the city. The following policies from the Conservation and Open Space Element are applicable to the project:

- **Policy COS-P12.4.** Require a Health Risk Assessment to be prepared for proposed sources of air pollution that will generate significant new and unmitigable air quality impacts or expose sensitive receptors to substantial increases in harmful emissions of toxic air pollutants. The Heath Risk Assessment shall be required to include mitigation measures consistent with the Yolo-Solano Air Quality Management District's Handbook for Assessing and Mitigating Air Quality Impacts.
- **Policy COS-P12.10.** Use the results of the Health Risk Assessments required by the California Air Toxics "Hot Spots" Act to establish appropriate land use buffer zones around any new sources of toxic air pollutants that pose substantial health risks.

Cumulative

The proposed project would be in the SVAB. Past, present, and reasonably foreseeable future development projects in the SVAB contribute to cumulative TAC levels and associated public health risks. The region experiences existing conditions of acute, chronic, and cancer health risks due to TACs attributable to the basin's development history.

For cumulative air quality and TAC assessments, CEC staff generally considers a six-mile radius appropriate because, based on staff's modeling experience, beyond six miles

there is no statistically significant overlap of nonreactive pollutant concentrations between stationary emission sources. Past, present, and reasonably foreseeable probable future public health impacts could be attributable to each of the cumulative projects, especially those that involve construction activities or O&M activities with substantial sources of air pollutants.

According to **Appendix A, Table A-1**, there are 130 existing, approved, pending and proposed projects within six miles of the project site.

5.10.2 Environmental Impacts

PUBLIC HEALTH	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determination.				
a. Would the project expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, air quality and staff additions.

5.10.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, CEC staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

CEC staff determines the health effects of exposure to toxic emissions based on impacts to the maximum exposed individual. This is a person hypothetically exposed to project emissions at a location where the highest ambient impacts were calculated using conservative assumptions of contaminant concentrations and exposure.

CEC staff conducts the public health assessment by evaluating the information and data provided by the applicant. CEC staff also relies upon the expertise and guidelines of the California Environmental Protection Agency (Cal/EPA) OEHHA to: (1) identify contaminants that cause cancer or other non-cancer health effects, and (2) identify appropriate health-based toxicity values, including cancer potency factors, non-cancer Reference Exposure Levels (RELs) of these contaminants, and acute exposure guideline levels (AEGLs) for short-duration release scenarios. CEC staff also relies upon the expertise of CARB and local air districts to conduct ambient air monitoring of TACs and on the California Department of Public Health (CDPH) to evaluate pollutant impacts in specific communities.

The public health related data sets, guidelines and technical analysis issued by these agencies are routinely relied on by experts in the field of public health to perform project level analysis to identify any impacts to public health from the construction and operation of the project. Typically, a screening level risk assessment is performed using simplified assumptions that are intentionally biased toward protection of public health. That is, an analysis is designed that overestimates public health impacts from exposure to project emissions. This approach increases the likelihood that the actual risks from the new source of emissions will be lower than the risks as estimated by the screening level assessment. The risks for screening purposes are based on examining conditions that would lead to the highest estimated concentrations and associated health risks and then using those conditions in the study. Such conditions include:

- using the highest levels of pollutants that could be emitted from the source;
- assuming weather conditions that would lead to the maximum ambient concentration of pollutants;
- using the type of air quality computer model which predicts the greatest plausible impacts;
- calculating health risks at the location where the pollutant concentrations are estimated to be the highest;
- using appropriate health-based toxicity values or exposure guidelines designed to protect the most sensitive members of the population (i.e., the young, elderly, and those with respiratory illnesses).

CEC staff evaluated health risks primarily in relation to DPM, identifying it as the TAC expected to be emitted in the largest quantity. Emissions of DPM are evaluated for potential long-term (chronic) non-cancer health effects, as well as cancer (long-term) health effects. OEHHA has not developed an acute Reference Exposure Level (REL) for DPM; therefore, acute non-cancer health effects are not evaluated for DPM. The significance of project health impacts is determined separately for each of these categories of health effects. To assess chronic health risks and cancer risks, CEC staff used annual average concentrations of DPM at the most exposed sensitive receptors. CEC staff applied OEHHA's Air Toxics Hot Spots Program Risk Assessment Guidelines (OEHHA 2015) and the YSAQMD Handbook for Assessing and Mitigating Air Quality Impacts (YSAQMD 2007) to determine toxicity values and exposure parameters. CEC staff calculated health risks using standardized equations provided in OEHHA guidelines (OEHHA 2015), incorporating adjustments for age-specific exposure rates and sensitivity.

Thresholds of Significance

Acute and Chronic Non-cancer Health Effects

To assess impacts during construction and routine operation, CEC staff evaluates the significance of non-cancer health effects by calculating a "hazard index." A hazard index is a ratio comparing exposure from facility emissions to the OEHHA reference (safe)

exposure level (REL). A hazard index of less than 1.0 indicates that the modeled maximum exposure is below the safe threshold, suggesting that health protection is likely achieved, even for sensitive populations. In such a case, staff presumes that there would be no significant non-cancer project-related public health impacts. The YSAQMD considers an increased non-cancer hazard index exceeding 1.0 to be significant (YSAQMD 2007). CEC staff considers chronic or acute non-cancer health impacts to be significant if the total hazard index exceeds 1.0 for construction and routine operation.

It should be noted that, as described in the OEHHA's 2008 *Air Toxics Hot Spots Risk Assessment Guidelines: Technical Support Document For the Derivation of Noncancer Reference Exposure Levels*, the purpose of acute RELs for the preparation of risk assessments under the Hot Spots Program is to evaluate impacts of short-term exposure from non-emergency releases (OEHHA 2008). As such, the RELs are appropriate to apply when routine emissions and exposure are the focus rather than in situations of emergency planning and response. OEHHA's 2008 Technical Support Document refers to a variety of guidance levels that have been developed to assist in addressing accidental chemical releases (OEHHA 2008).

Considering that a BESS thermal runaway or fire event is an episodic accidental release rather than a routine emission source, and produces only transitory exposure, CEC staff evaluates potential impacts during such an event using the Acute Exposure Guideline Levels (AEGLs) described in OEHHA's 2008 Technical Support Document (OEHHA 2008). AEGLs are chemical-specific values that were developed and updated by a federal advisory committee chartered by the U.S. EPA. Their development involved collaboration with the National Research Council (NRC), other federal agencies (e.g., Department of Defense, Department of Energy), and private sector experts to plan for and respond to rare, short-term releases of airborne chemicals, such as during a chemical spill. They are used to estimate public health effects and identify hazard areas by comparing the concentration of a chemical to the AEGL levels for different exposure durations, which can range from 10 minutes to 8 hours. AEGLs are designed to be used for:

1. Emergency planning: AEGLs provide guidance for rare, short-term exposures to airborne chemicals to help protect the public in emergency situations.
2. Accidental chemical releases: They are used by emergency responders when dealing with events like chemical spills to help determine the severity of the hazard.
3. Public protection: The guidelines help identify areas where the concentration of a hazardous gas could cause discomfort, serious health effects, or life-threatening conditions, allowing for protective actions like evacuation or sheltering in place.
4. Assessing risk: AEGLs help in assessing the potential health effects on the general public, including sensitive populations like children and the elderly, from a one-time exposure to a chemical. The different levels of an AEGL are as follows:
    - AEGL-1: The concentration above which most people might experience notable discomfort or irritation, but the effects are temporary and not disabling.

- AEGL-2: The concentration above which serious, long-lasting health effects or irreversible health effects could occur, or an impaired ability to escape the situation.
- AEGL-3: The concentration above which there is a potential for life-threatening effects or death.

In this analysis, under subsection, "BESS Thermal Runaway and Fire Impacts," below, any exceedance of the health-protective thresholds for accidental releases (i.e. AEGLs) during any BESS thermal runaway or fire event warrants further review and consideration of shelter-in-place or evacuation.

Cancer Risks

A cancer risk that is at or below 1 chance in a million (or 1×10^{-6}) is not a public health concern. This means that no more than one person in a population of one million people exposed to the same level of chemical contaminant(s) at the site would develop cancer over a lifetime (OEHHA 2020).

CEC staff evaluates the significance of cancer risks by comparing estimated risks to established thresholds by YSAQMD. The YSAQMD considers a project to have a significant impact if it increases cancer risk by 10 in one million (YSAQMD 2007).

As noted earlier, the initial risk analysis for a project is typically performed at a screening level, which is designed to overstate actual risks, so that health protection can be ensured. CEC staff's analysis also addresses potential impacts on all segments of the population, including the young, the elderly, and individuals with existing medical conditions that would render them more sensitive to the adverse effects of TACs and any minority or low-income populations that are likely to be disproportionately affected by impacts. To accomplish this goal, CEC staff uses the most current acceptable public health exposure levels set to protect the public from the effects of air toxics being analyzed. When a screening analysis shows the cancer risks to be above the significance level, a refined assessment using tools like CARB's Hotspots Analysis and Reporting Program Version 2 (HARP2) would be applied for a more realistic risk estimate. If, after refined assumptions, the project's risk is still found to exceed the significance level of 10 in one million, CEC staff would recommend appropriate measures to reduce the risk to less than significant levels. If, after all feasible risk reduction measures have been considered and a refined analysis still identifies a cancer risk of greater than 10 in one million, CEC staff would deem such a risk to be significant and unmitigable.

5.10.2.2 Direct and Indirect Impacts

Where available, the significance criteria established by the applicable air quality management district or air pollution control district may be relied upon to make the following determination.

a. Would the project expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts?

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with the implementation of conditions of certification (COCs) and mitigation measures described in **Section 5.1, Air Quality**, construction of the project, including jurisdictional and non-jurisdictional project components, would not expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts.

Jurisdictional Project Components

Potential risks to public health during construction would be associated with exposure to particulate matter emissions from diesel-fueled engines to individuals near the site. DPM is expected to be the predominant TAC emitted during construction and is the main contaminant of concern for this project during construction or routine operations. Impacts during BESS thermal runaway and fire incidents are discussed separately below. The project has included construction emission estimates based on a 14-month construction period (or 15 months if a groundwater well is constructed).

Health Risks of Toxic Air Contaminants

The applicant's health risk assessment (HRA) focused on the DPM emissions, which would be a subset of the total PM10 impact. The applicant first conducted air dispersion modeling for the HRA using the American Meteorological Society/ Environmental Protection Agency Regulatory Model (AERMOD), version 24142. Five years of AERMOD-ready meteorological data (2017-2021) comprising surface observations at the Nut Tree Airport in Vacaville, California, with concurrent upper air data from Oakland, California, were obtained from CARB. The five years of meteorological data were used in AERMOD to determine how emissions disperse from the source to receptors. The applicant modeled maximum hourly and annual concentrations at receptor points. The applicant then used CARB's HARP2, version 22118, to determine cancer and non-cancer health risks. The applicant assessed cancer risks and chronic non-cancer risks for the maximum exposed individual resident (MEIR), the maximum exposed individual worker (MEIW), and the maximum exposed individual sensitive receptor (MEIS). CEC staff reviewed the applicant's HRA for construction and agreed with the inputs used by the applicant and the outputs from the model.

Table 5.10-1 provides the health risks at the MEIR, the MEIW, and the MEIS to reflect the mitigated emissions for the construction period with the use of Tier 4 off-road equipment, as specified in COC **AQ-SC5** for jurisdictional project components in **Section 5.1, Air Quality**. The results show that, with the implementation of COC **AQ-SC5**, the cancer risks at the MEIR, the MEIW, and the MEIS would be below the YSAQMD threshold of 10 in one million. The chronic non-cancer hazard index (HI) at the MEIR, the MEIW, and the MEIS would be well below the YSAQMD thresholds during construction. In addition, since OEHHA has not developed an acute REL for DPM, acute

non-cancer health effects are not evaluated. Therefore, COC **AQ-SC5** would be necessary to ensure that health risks during construction are less than significant.

TABLE 5.10-1 HEALTH RISKS IMPACT DURING CONSTRUCTION-MITIGATED

Receptor Type	Cancer Risk Impact (in one million)	Chronic Non-Cancer Hazard Index (HI)	Acute Non-Cancer Hazard Index (HI)
MEIR	4.09	0.005	N/A
MEIW	0.04	0.003	N/A
MEIS	0.027	<0.001	N/A
Threshold	10	1.0	1.0
Threshold Exceeded?	No	No	No

Note: The MEIR location during construction is located around 160 feet north of the project construction boundary (880 feet from the closet BESS unit). The MEIW location is located around 264 feet east of the project construction boundary. The MEIS location, which is the Kaiser Permanente Vacaville Medical Center, is located around 1.25 miles west of the project construction boundary.
Source: TT 2025g

Valley Fever. Construction activities, including ground-disturbing operations, could increase the potential for exposure to airborne spores among nearby residents and on-site workers if such spores are present. It is the growth of these inhaled spores in the lungs that constitutes Valley Fever whose symptoms could be mild with influenza-like symptoms and rashes, or life-threatening from pneumonia, lung nodules, and meningitis. The risk of serious symptoms is highest for individuals with weakened immune systems such as pregnant women, and those with several types of pre-existing diseases. This infection risk is minimized through measures that require soil disturbance and dust generation work to be performed in a manner that limits and avoids dust generation to the extent reasonably possible. Implementation of fugitive dust control measures specified in COCs **AQ-SC3**, **AQ-SC4**, for jurisdictional project components and **MM AQ-1** for non-jurisdictional project components in **Section 5.1, Air Quality**, would reduce any potential public exposure to such spores. In addition, staff recommend COC **WORKER SAFETY-9** in **Section 4.4, Worker Safety and Fire Protection**, to ensure that exposure to Valley Fever among personnel and the public would be reduced to the greatest extent feasible.

CO Hotspots. The project site is located within the SVAB. The SVAB is designated as attainment/unclassified for CO with respect to both the California Ambient Air Quality Standards (CAAQS) and the National Ambient Air Quality Standards (NAAQS). Additionally, as shown in **Section 5.1, Air Quality**, CO impacts from construction and operation would not exceed ambient air quality standards.

Non-Jurisdictional Project Components

Construction of non-jurisdictional project components, including the interconnection facilities and the new Corby Bay, would generate short-term emissions from construction equipment, material transport and associated activities. Construction activities for these components would be temporary in nature and are unlikely to result in long-term adverse effects on public health. Short-term construction emissions and

any associated public health impacts, such as exposure to dust or other airborne pollutants, would dissipate as a function of distance from the construction site and comply with applicable regulations. The modeled health risks shown in **Table 5.10-1** included construction emissions from the non-jurisdictional project components and the results show a less than significant impact. Moreover, these activities would not introduce any new sources of significant health risks, such as hazardous air pollutants or toxic emissions, beyond those identified and mitigated elsewhere in this analysis.

Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, with implementation of COCs, operation of the project, including jurisdictional and non-jurisdictional components, would not expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts.

Routine operation of the project would not include any stationary equipment that would be a source of significant TAC emissions. Any on-road, diesel-powered vehicles associated with maintenance or material deliveries would operate for short durations and would not remain at any one location for extended periods such that they would expose sensitive receptors to excessive DPM emissions. As such, operation-related TAC emissions would be small, and ongoing operations would not expose sensitive receptors to substantial pollutant concentrations or result in other public health impacts. Therefore, routine operational impacts would be less than significant.

BESS Thermal Runaway and Fire Impacts

Section 4.4, Worker Safety and Fire Protection provides a detailed discussion regarding potential BESS safety hazards and concludes that the risk of BESS thermal runaway is small and is heavily influenced by older (pre-2023) technology. The overall utility-scale BESS failure rate has sharply decreased while the global installed capacity has dramatically increased. The most recent data from EPRI shows that the failure rate dropped by 99 percent from 2018 to 2025 as lessons learned from early failures have been incorporated into the latest designs and best practices. See more detailed discussion in **Section 4.4, Worker Safety and Fire Protection**. **Appendix D** also provides a detailed analysis of the frequency of events for newer, LFP-type systems.

The American Clean Power Association (ACP) report “Assessment of Potential Impacts of Fires at BESS Facilities,” prepared by Fire & Risk Alliance, LLC, provides a detailed literature review and analysis of historical BESS fire incidents and the extent of environmental impacts (ACP 2025). The toxicity assessment methods included in the ACP literature review include: Occupational Exposure Limits (OELs), published by both the National Institute for Occupational Safety and Health (NIOSH) and the Occupational Safety and Health Administration (OSHA); the Emergency Response Planning Guideline (ERPG), established by the National Oceanic and Atmospheric Administration (NOAA); Acute Exposure Guideline Levels (AEGLs), developed by the National Research Council (NRC) and promoted by the U.S. EPA; Immediately Dangerous to Life and Health (IDLH), referenced by NIOSH; and Threshold Limit Value by the American Conference

of Governmental Industrial Hygienists (ACGIH), etc. The ACP report notes that for an analysis of the health impact of exposure of individuals located in a nearby community, AEGLs are often cited by the U.S. EPA. Consistent with this approach, staff used AEGLs to determine the significance of BESS thermal runaway and fire impacts on public health in this assessment.

A key concern in BESS fire events is the release of toxic gases, but studies reviewed in the ACP report indicate that emissions are largely confined to the immediate vicinity of the fire, with rapid dissipation and concentration reduction in open-air scenarios. Air sampling from past incidents reviewed in the ACP report has found that contaminant concentrations beyond the immediate fire scene do not pose a public health risk. CEC staff reviewed the air monitoring/modeling reports available for the past incidents discussed in the ACP report as well as the more recent December 2025 BESS fire in Warwick, NY, and the following is a summary of staff's review:

- **Surprise, AZ – April 19, 2019.** The April 19, 2019 incident at the outdoor McMicken Battery Energy Storage System, an enclosed BESS facility in Surprise, Arizona resulted in the injury of multiple firefighters. Subsequently, there have been extensive investigations undertaken post-incident by UL and Arizona Public Service (APS). Hazardous hydrogen cyanide (HCN) and carbon monoxide (CO) gas concentrations were detected at the gate to the fenced area (above 50 ppm and 500 ppm, respectively)[1] (ULFSRI 2020). APS hired AECOM and Wood to conduct an evaluation of both on-site and off-site environmental and health impacts of the event. The environmental investigation involved collecting and evaluating on-site environmental media samples, such as surface soils, and performing air dispersion modeling to evaluate the potential for off-site environmental impacts (APS 2020). AECOM collected both surficial soil samples from the area around the BESS and wipe samples from within the BESS structure. AECOM found that none of the samples exhibited contaminant of concern concentrations in excess of levels that would require site remediation or other response actions. Wood performed air dispersion modeling to develop a conservative quantification of likely off-site deposition of contaminant of concern particulates moving through the air in the plume. Wood's analysis relied upon conservative emission rates. Satellite imagery and site-specific meteorological data were also utilized, along with an evaluation of the on-site soil and structure wipe sampling data. As a result of this dispersion modeling analysis, Wood found that contaminant of concern particulate matter deposition through the air was minimal and primarily confined to on-site locations near the BESS structure and modeled off-site concentrations of contaminants of concern were lower than applicable state and federal standards governing environmental, health, and safety protection from hazardous substance releases (APS 2020).
- **Warwick, NY – June 26 and 27, 2023.** Two independent outdoor fire events occurred on June 26 and June 27, 2023 in Warwick, New York. The Orange County,

1 Staff notes that the IDLH level for HCN is 50 ppm. And the Emergency Response Planning Guideline level 3 (ERPG-3) level for CO is 500 ppm, which is the threshold for avoiding life-threatening health consequences.

NY HAZMAT Response Team responded to the two independent events and collected air samples for each event. Low levels of CO and HCN were detected in the area approximately 1 meter (3.3 feet) from the affected containers and not detected outside the fence line. Air monitoring was also conducted at the Warwick Valley School, which is about 900 feet away from the BESS unit where fire was initiated. Low levels of VOCs and CO were detected outside of the building (ground levels and on the rooftop) up to 0.1 to 0.5 ppm. There were no elevations of VOCs or CO detected in any indoor locations. Hydrogen sulfide (H_2S) levels were all below 0.2 ppm. Indoor airborne particulate matter levels within the school and administrative offices were all lower than outdoor levels. No bromide or fluoride were detected from any of the sampled locations. Low level smoke-like odors were detectable in a few offices and classrooms. There were no signs of smoke residues on surfaces of supply air diffusers, walls, desktops or floors of the Administrative/Middle School building at the time of inspection. Surface sampling for lithium revealed no detected lithium (<0.250 micrograms per square foot) from any office, classroom or bus surfaces sampled (NYSERDA 2023).

- **Chaumont, NY – July 27 through August 1, 2023.** On July 27, 2023, an outdoor multi container fire occurred at the Convergent Energy facility in Lyme, New York. Over the five-day BESS fire event, air monitoring was conducted by the Watertown hazmat team with New York State Office of Fire Prevention and Control (OFPC) technical assistance. The detection instruments used were looking for oxygen (O_2), explosive gases (Lower Explosive Limit [LEL]), CO, H_2S, VOC, and HCN. Readings on the evening of July 27, 2023 were negative except for HCN which showed a maximum level of 4 ppm next to the damaged container and 0 ppm at 200 feet from the involved areas. On July 29, 2023, a very low level of CO (single digit readings) was detected at the perimeter fence. Air monitoring in the Village of Chaumont shows a finding of 1 ppm VOC, which was consistent with background levels and/or sensor drift and deemed not significant. On August 1, 2023, trace readings of CO, VOC and HCN were found at the base of the containers that had previously been involved in the fire and no detectable amounts of these materials were found at the fence line (NYSERDA 2023).
- **Melba, ID – October 2 to October 6, 2023.** Idaho Power contracted a consultant, CTEH, to provide air monitoring and sampling support in response to the Melba, ID BESS outdoor fire event that started on October 2, 2023. This was done to augment air sampling efforts being performed prior to the consultant's arrival on site by Idaho Power's Industrial Hygiene Services. Air monitoring was performed both during the multi-day fire event and consisted of real-time air monitoring both on-site and in the surrounding community (ACP 2025). Community monitoring was conducted at breathing zone level in publicly accessible residential areas near the substation. CTEH personnel conducted handheld and stationary real-time air monitoring for LEL, CO, carbon dioxide (CO_2), hydrogen fluoride (HF), hydrogen chloride (HCl), acid gases, particulate matter with a diameter of 2.5 micrometers or less (PM2.5), and VOCs. Industrial Hygiene Services conducted analytical air sampling for total dust, total metals particulates, metals particulates with an average

particulate size of 4 µm, and total volatile organic compounds (TVOCs) in four general downwind locations from the substation. CTEH personnel also deployed analytical air sampling of VOCs, metals particulates, and polycyclic aromatic hydrocarbons (PAHs) at five discrete locations around the substation. During community monitoring, no detections of VOCs, %LEL, HF, HCl, CO, or acid gases were observed. No concentrations of PM2.5 exceeding the health-based action level of 0.138 mg/m^3 were observed. All detections of CO_2 were within normal atmospheric levels. Results of both real-time air monitoring and analytical air sampling conducted from both monitoring groups indicate that all chemical constituents measured around the impacted substation were not at levels that would represent a public health concern (CTEH 2023).

- **Escondido, CA – September 5, 2024.** The City of Escondido released an air quality monitoring report after a fire occurred on September 5, 2024, which impacted one outdoor container at an energy storage facility in Escondido, California (City of Escondido 2024). The air quality data came from 11 different locations monitored by San Diego County HAZMAT and 17 locations monitored by Haley & Aldrich, Inc., SDG&E's third-party contractor. The stations were located approximately 100 feet to as far as 4,000 feet from the affected container (CESA 2024). Monitored gases included: CO, HF, HCN, H_2S, phosphine (PH_3), chlorine (Cl_2), LEL, CO_2, O_2. The equipment only detected the presence of two toxic gases, CO and HCN. The highest detected CO and HCN readings were measured at Enterprise Gate, approximately 262 feet from the incident, with CO at 18 ppm and HCN at 2 ppm. All of the readings for both gases were well below acceptable exposure limits, including Permissible Exposure Limit (PEL) set by OSHA, REL and IDLH. The City of Escondido report concludes that "… only normal products combustion [sic] of a structure fire were detected and at levels considered by NIOSH and OSHA to be well below exposure thresholds."
- **Moss Landing, CA – January 16, 2025.** On January 16, 2025, an indoor fire broke out in the 300 MW Moss Landing Battery Energy Storage Facility owned by Vistra Energy, located in Moss Landing, California. The fire occurred within a converted, historic, generator hall on-site. At the request of Monterey County, the U.S. EPA deployed nine air monitoring stations for particulate matter and HF. As part of the multi-agency emergency response, U.S. EPA installed the first seven monitors shortly after the fire started on January 17 and later deployed two more. Two monitoring stations were located at the facility and four were located just outside the facility, including one at Moss Landing, three are also in communities due east of the fire, to the south near Castroville, and to the north in the vicinity of Moss Landing Middle School. Monitoring stations were located to account for any changes in wind direction and potential drift to nearby communities. U.S. EPA's monitoring showed concentrations of particulate matter to be consistent with the air quality index throughout the Monterey Bay and San Francisco Bay regions, with no measurements exceeding the moderate air quality level. HF gas was measured at one second intervals and there were no exceedances of California's human health standards. In addition to U.S. EPA's monitoring, Vistra Energy brought in a third-

party environmental consultant, CTEH, right after the fire started, to conduct roaming and fixed air monitoring in communities (U.S. EPA 2025a). CTEH conducted extensive air quality monitoring in and around the Moss Landing community as part of response efforts. CTEH mobile air monitoring personnel sampled over 100 locations, testing for seven air constituents specific to this type of fire, including CO, HCl, HCN, HF, %LEL, O_2 and PM2.5. CTEH's monitoring did not detect hazardous compounds (HF, HCl, HCN, CO), and all particulate matter readings were low and within expected air quality index (AQI) bands deemed safe for the general public (Vistra 2025). CTEH also collected analytical air samples to test for the presence of the following constituents: Aluminum, Asbestos (fibers), Cobalt, Copper, Manganese, and Nickel. The vast majority of laboratory results were below health-based screening levels, with only 7 of more than 16,000 samples registering above these thresholds. These exceedances involved Nickel or Cobalt. However, the results were short-term, intermittent, and at different locations and all were at plant perimeter sites. No community air samples exceeded any screening levels. Post-incident environmental testing and monitoring information is summarized on the County of Monterey website (County of Monterey 2025).

- **Warwick, NY – December 19 to December 22, 2025.** On December 19, 2025, an outdoor fire occurred at the energy storage developer Convergent Energy & Power's Church Street Battery Storage Facility at 28 Church Street in Warwick, New York. The facility is at the rear of a commercial business park. The fire was confined to one container unit. The Orange County Hazardous Materials Management (HAZMAT) team began providing continuous air monitoring at 12:27 AM on December 20, 2025 (Labella, 2026). Air monitoring persisted until 2:00 PM on December 22, 2025. Air monitoring was conducted in one-minute increments at three locations surrounding the fire, including Warwick Little League Park, approximately 600 feet south of the site, and the southeast and northeast corners of the burn site. The monitoring included CO, HCN, NH_3, VOCs, and Cl_2. The maximum reported concentrations were 4 ppm CO, 1.5 ppm HCN, 1.0 ppm NH_3, 0.3 ppm VOCs and 0.5 ppm Cl_2. The highest CO, HCN, VOCs, and Cl_2 readings, which were reported at Warwick Little League Park, primarily occurred between midnight and 8:00 AM on December 20, 2025. The maximum NH_3 reading was reported at Warwick Little League Park and later at the northeast corner of the burn site on December 20, 2025. The reported maximum concentrations did not exceed the applicable U.S. EPA and New York State Department of Environmental Conservation (NYSDEC) ambient air quality standards. OSHA short-term exposure limits were used for informational comparison if a U.S. EPA or NYSDEC regulatory limit is not available (Labella, 2026). The reported concentrations were all below the U.S. EPA and NYSDEC ambient air quality standards or OSHA short-term exposure limits.

Appendix D provides a detailed analysis regarding potential air quality and public health impacts during a BESS thermal runaway and fire event for the project. Based on conservative assumptions, **Appendix D** shows that a BESS incident could cause an exceedance of the AEGL-1 for 1-hour NO_2 at the closest few receptors within 2,029 ft (0.38 miles) of the incident BESS unit during worst-case meteorological conditions. As shown in Attachment 1 of **Appendix D**, the worst-case modeled NO_2 concentration at the nearest North receptor is 2,587.5 $\mu g/m^3$, which is above the NO_2 AEGL-1 of 941 $\mu g/m^3$, but remains well below the NO_2 AEGL-2 of 22,582 $\mu g/m^3$. When considering impacts from multiple TACs, **Appendix D** shows a maximum total Hazard Index of 3.44 when comparing against AEGL-1 levels at the nearest sensitive receptor, indicating that the worst-case combined impacts from TACs would be 3.44 times of AEGL-1. However, when compared against AEGL-2 levels, the maximum total Hazard Index at the nearest sensitive receptor would only be 0.18, indicating the worst-case combined impacts would be well below AEGL-2. As discussed above, with concentrations above AEGL-1, most people might experience notable discomfort or irritation, but the effects are temporary and not disabling. And the modeling results show concentrations well below AEGL-2; therefore, CEC staff does not expect any serious, long-lasting health effects or irreversible health effects to occur or an impaired ability to escape the situation. In addition, **Appendix D** also shows that across the full set of 43,824 modeled hours, each of which it is assumed emissions are occurring, the NO_2 AEGL-1 threshold was exceeded at the nearest receptor for only 301 hours, representing approximately 0.7 percent of the total modeled period. For all other hours, an incident would not cause health thresholds at the closest receptor to be exceeded. The modeled NO_2 AEGL-1 exceedance hours for other nearby receptors are substantially fewer than 301 hours over the 43,824-hour modeled period, indicating a modeled exceedance frequency significantly lower than 0.7 percent. Moreover, for the purpose of evaluating potential impacts, the analysis conservatively assumed the BESS unit closest to the nearest resident would be the affected unit. However, a thermal runaway event would not necessarily occur at the closest unit, the affected unit could be located further away from the nearby residents. Under such circumstances, potential public health impacts would be expected to be even lower than the modeled results due to the increased distance from the release location to the public.

In addition, **Appendix D** indicates that for newer, LFP-type systems, a BESS event is estimated to occur only once every 11 to 67 years. For the detailed calculation methodology of the estimated frequency, please see **Appendix D**. Even if such an event occurs, the probability that nearby residents would experience notable but temporary symptoms is only 0.7 percent under worst-case meteorological conditions. Based on these factors, CEC staff finds that the probability of a BESS incident exposing sensitive receptors to substantial pollutant concentrations would be very unlikely.

However, in order to ensure public health is protected, CEC staff recommends COC **PH-1** to require the applicant to prepare, in coordination with the Dixon Fire Department, the Vacaville Fire Department, and the CEC, an Emergency Response Plan and implement an emergency notification system for BESS thermal runaway non-fire, fire, or

explosion scenarios. CEC staff also recommends COC **PH-2** to require the applicant to conduct real-time air quality monitoring to provide timely feedback to any workers or people potentially affected during BESS thermal runway non-fire, fire, or explosion scenarios. In addition, staff recommended COCs in **Section 4.4, Worker Safety and Fire Protection**, and **Section 5.7, Hazards, Hazardous Materials, and Wildfire**, would further reduce any impacts to public health. COC **WORKER SAFETY-6** would ensure that the proposed BESS would comply with the latest versions of National Fire Protection Association (NFPA) 855 for BESS safety. COC **WORKER SAFETY-7** would require administrative and engineering controls to prevent or respond to a fire from the BESS and providing the fire departments with hand-held gas detectors capable of detecting CO, NO_2, and HF. COC **WORKER SAFETY-10** would require providing the DFD with a drone capable of detecting toxic air contaminants including NO_2, CO, and HF, thus allowing for immediate detection of TAC levels within the plume when the first responders arrive at the scene. COC **WORKER SAFETY-8** would ensure additional fire protection and worker EMS response. COC **HAZ-9** would also require soil and water measurements. The adoption of these COCs would reduce the risk and impacts of any BESS thermal runway/fire events to less than significant.

5.10.2.3 Cumulative Impacts

Past, present, and reasonably foreseeable probable future public health impacts could be attributable to each of the cumulative projects, especially those that involve construction activities or O&M activities with substantial sources of air pollutants. As mentioned above, according to **Appendix A, Table A-1**, there are some existing, approved, pending and proposed projects of potential sources of toxic air contaminants within six miles of the project.

Each of the projects in the cumulative project scenario could result in some level of contribution to public health impacts, although the individual contribution of each project would be minimized if the project complies with applicable health-protective thresholds. While air quality cumulative impacts could occur with sources within a six-mile radius (as discussed in **Section 5.1, Air Quality**), cumulative public health impacts from TACs are usually not significant unless the emitting sources are extremely close to each other, within a few blocks, not miles. CARB provides recommendations for siting new sources or sensitive receptors near TAC sources, with recommended distances typically ranging from 500 to 1,000 feet, depending on the source category (CARB 2005). **Appendix A, Table A-1** shows three projects within 1,000 ft of the project. However, the proposed project does not include any stationary emission sources. As a result, the project is not expected to lead to significant overlapping TAC concentrations with the nearby projects.

Construction

Less Than Significant with Mitigation Incorporated. With the implementation of COC **AQ-SC5**, the contribution of the project construction to both cancer risk and chronic non-cancer impacts would be small in a cumulative context including other regional

sources. As analyzed above, construction of non-jurisdictional components would not introduce any new sources of significant health risks, such as hazardous air pollutants or toxic emissions, beyond those identified and mitigated elsewhere in this analysis. Additionally, construction traffic is not expected to create a CO hotspot. Construction activities would be short-term, and impacts would be less than significant with mitigation incorporated on a cumulative basis.

Operation

Less Than Significant with Mitigation Incorporated. Any on-road, diesel-powered vehicles associated with maintenance or material deliveries would operate for short durations and would not expose sensitive receptors to excessive DPM emissions. The public health impacts of the project during routine operation, including jurisdictional and non-jurisdictional components, would be very small even in a cumulative context including other regional sources; its contribution to area health impacts during project routine operation would thus be less than significant in a cumulative context. With implementation of COCs discussed above, the potential health impacts during a BESS thermal runaway and fire event would also be less than significant.

5.10.3 Project Conformance with Applicable LORS

Table 5.10-2 below details CEC staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the jurisdictional project components would conform with LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the proposed project would conform with all applicable LORS. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.10-2 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
None	
State	
California Health and Safety Code section 39650 et seq.	**Yes.** With implementation of COCs, the proposed project would not include sources that emit listed TACs above regulated threshold quantities. In addition, as discussed above, the Health Risk Assessment shows that the project would have less than significant impacts to public health with implementation of COCs.
California Health and Safety Code Section 41700	**Yes.** With implementation of COCs, the proposed project would not include sources that emit listed TACs above regulated threshold quantities. In addition, as discussed above, the Health Risk Assessment shows that the project would have less than significant impacts to public health with implementation of COCs.

TABLE 5.10-2 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Air Toxics Hot Spots Program	**Yes.** With implementation of COCs, the proposed project would not include sources that emit listed TACs above regulated threshold quantities. In addition, as discussed above, the Health Risk Assessment shows that the project would have less than significant impacts to public health with implementation of COCs.
ATCM to Limit Diesel-Fueled Commercial Motor Vehicle Idling	**Yes.** COC **AQ-SC5** would minimize engine idling time.
Local	
Solano County Goal LU.G-4, Goal HS.G-8,Goal HS. G-9, Policy HS.P-86, HS.I-58. YSAQMD Rule 2.5. City of Vacaville Policy COS-P12.4, Policy COS-P12.10	**Yes**. As detailed in **Section 5.1, Air Quality** and **Section 5.10, Public Health**, the project would comply with Solano County's general plan, policies, YSAQMD rule and City of Vacaville policies with implementation of Air Quality COCs **AQ-SC1** through **AQ-SC5** and recommended **MM AQ-1** and **MM AQ-2**.

5.10.4 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to public health and would conform with applicable LORS. CEC staff recommends adopting COC **PH-1**, COC **PH-2**, COCs **AQ-SC3** through **AQ-SC5** in **Section 5.1, Air Quality**, COC **WORKER SAFETY-6**, COC **WORKER SAFETY-7**, COC **WORKER SAFETY-8**, COC **WORKER SAFETY-9**, COC **WORKER SAFETY-10** in **Section 4.4, Worker Safety and Fire Protection** and COC **HAZ-9** in **Section 5.7, Hazards, Hazardous Materials, and Wildfire**.

Impacts associated with non-jurisdictional project components to be considered for permitting by CPUC would be less than significant.

5.10.5 Proposed Conditions of Certification

PH-1 Prior to project operation, the applicant shall prepare, in coordination with the Dixon Fire Department, the Vacaville Fire Department, and the CEC, a Battery Energy Storage System (BESS) Emergency Response Plan (ERP) for thermal runaway non-fire, fire, or explosion scenarios.

The ERP shall be reviewed by the Dixon Fire Department, the Vacaville Fire Department and approved by the CPM prior to operation of the project and shall be updated at least annually or upon any material change to project design, battery chemistry, or storage capacity, etc.

Prior to operation, the applicant shall fund and implement an emergency notification system capable of rapid communication to nearby occupants via

methods such as text alerts, phone alerts, email alerts, sirens or loudspeakers where appropriate, and door-to-door notification if necessary.

Verification: The project owner shall submit the proposed ERP to the CPM 120 days prior to proposed BESS operations for review and approval and to the Dixon Fire Department and the Vacaville Fire Department for review and comment. The project owner shall submit a letter with comments, if any, from the fire departments with responses to comments and any proposed revisions of the ERP to the CPM for review and approval. The project owner shall submit documentation demonstrating compliance with the emergency notification system installation requirements to the CPM at least 30 days prior to the commencement of BESS operations.

PH-2 The project owner shall contract with a third-party consultant who shall be on-call and prepared to conduct real-time air quality monitoring at the site upon notification by the project control room that a battery cell(s) have experienced a rise in temperature such that off-gassing could occur, a non-fire thermal runaway begins, a fire, or an explosion occurs. This consultant shall be properly equipped to conduct real-time sampling and analysis as soon as possible and shall be selected on the basis of an ability to begin no later than two hours after notification that a non-fire off-gassing is occurring. Air monitoring shall continue until the BESS thermal runaway non-fire, fire, or explosion incident has stabilized. For incidents involving fire, monitoring shall continue not less than four hours after visible flames are no longer present. For non-fire incidents, monitoring shall continue until off-gassing or other visible emissions are no longer observed, or until the incident has been stabilized as determined by the responding fire agency, and at least four hours thereafter.

The project owner shall develop a Sampling and Analysis Plan (SAP) for air monitoring. Substances monitored shall include carbon monoxide (CO), carbon dioxide (CO_2), nitrogen dioxide (NO_2), metals, hydrogen fluoride (HF), hydrogen chloride (HCl), hydrogen cyanide (HCN), benzene, acrolein, particulate matter with diameters 10 micrometers or smaller (PM10), fine particulate matter with diameters 2.5 micrometers or smaller (PM2.5), and ultrafine particulates of 0.1 micrometers in diameter or smaller. The SAP shall also include the locations of stationary fence line and off-site samplers, the deployment of mobile devices for real-time measurements including coordination with the DFD drone capabilities and chemical sensor data, the protocols for maintenance and calibration of all equipment, and shall be submitted to the CPM for review and approval and to the California Department of Health (CDPH), the local county Department of Public Health (DPH), and the Yolo-Solano Air Quality Management District (YSAQMD) for review and comment.

The project owner shall establish protocols with emergency responders to ensure that real-time air monitoring data is communicated to the incident commander and the YSAQMD.

Verification: The project owner shall submit the proposed SAP to the CPM 120 days prior to proposed BESS operations for review and approval and to the CDPH, the local county DPH, and the YSAQMD for review and comment. The project owner shall submit a letter with comments, if any, from the CDPH, the local county DPH, and the YSAQMD along with responses to comments and any proposed revisions of the SAP to the CPM for review and approval.

5.10.6 Recommended Mitigation Measures

No mitigation measures are recommended for public health.

5.10.7 References

ACP 2025 – American Clean Power (ACP). Assessment of Potential Impacts of Fires at BESS Facilities. Literature Review. August 21, 2025. Accessed on: April 1, 2026. Accessed online at: https://cleanpower.org/wpcontent/uploads/gateway/2025/03/Assessment-of-Potential-Impacts-of-Fires-at-BESS-Facilities_FINAL_Sep-2025.pdf

APS 2020 – Arizona Public Service (APS). McMicken Battery Energy Storage System Event Technical Analysis and Recommendations. July 18, 2020. Assessed March 24, 2025. Available online at: https://www.aps.com/-/media/APS/APSCOM-PDFs/About/Our-Company/Newsroom/McMickenFinalTechnicalReport.pdf

CARB 1998 – California Air Resources Board (CARB). 1998. Proposed Identification of Diesel Exhaust as a Toxic Air Contaminant. Appendix III, Part A, Exposure Assessment. June 1998. Accessed on: April 8, 2026. Accessed online at: https://ww3.arb.ca.gov/toxics/dieseltac/part_a.pdf

CARB 2005 – California Air Resources Board (CARB). Air Quality And Land Use Handbook: A Community Health Perspective. Accessed on April 7, 2026. Accessed online at: https://www.aqmd.gov/docs/default-source/ceqa/handbook/california-air-resources-board-air-quality-and-land-use-handbook-a-community-health-perspective.pdf

CARB 2024 – California Air Resources Board (CARB). Overview: Diesel Exhaust & Health. Accessed on: April 8, 2026. Accessed online at: https://ww2.arb.ca.gov/resources/overview-diesel-exhaust-and-health

CDPH 2025 – California Department of Public Health. Valley Fever in California Year-end Data Dashboard. Accessed on: April 8, 2026. Accessed online at: https://www.cdph.ca.gov/Programs/CID/DCDC/Pages/ValleyFeverDashboard.aspx

CESA 2024 – California Energy Storage Alliance (CESA). Air and Water Quality Data from Escondido Fire Show Minimal Contamination. October 2, 2024. Accessed on March 1, 2026. Accessed online at: https://storagealliance.org/news/air-and-water-quality-data-from-escondido-fire

County of Monterey 2025 – County of Monterey, CA. Current Emergency Information, Accessed on: April 2, 2026. Available online at: https://www.readymontereycounty.org/emergency/2025-moss-landing-vistra-power-plant-fire/testing

CTEH 2023 – Center for Toxicology and Environmental Health, LLC (CTEH). Air Modeling and Sampling Summary: Melba, ID Fire incident, October 2 – October 6, 2023. Accessed on: February 24, 2025. Available online at: https://portal.ct.gov/-/media/csc/3_petitions-medialibrary/petitions_medialibrary/mediapetitionnos1601-1700/pe1607/motiontoreopen/exhibit-f--sdgeescondido-besf-air-quality-report-ctehidaho.pdf?rev=cdd9351721ba43dbb813dd5e1f19c37b&hash=1271FCAC25258D1AE95BEB62012276AB

DIR 2022 – Department of Industrial Relations (DIR). Protection from Valley Fever; Updated: April 2022. Accessed on January 8, 2026. Accessed online at: https://www.dir.ca.gov/dosh/valley-fever-home.html

Labella 2026 – Labella Associates. Battery Fire Air Monitoring Synopsis: Convergent Energy & Power's Church Street Battery Storage Facility; Accessed on: May 21, 2026. Accessed online at: https://villageofwarwickny.gov/wp-content/uploads/BESS_Fire_Air_Monitoring_Synopsis_Revised.pdf

MMWR 2020 – Hurd-Kundeti G, Sondermeyer Cooksey GL, Jain S, Vugia DJ. Morbidity and Mortality Weekly Report 2020. Accessed on April 30, 2026. Accessed online at: https://www.cdc.gov/mmwr/volumes/69/wr/mm6942a2.htm?s_cid=mm6942a2_w#suggestedcitation

OEHHA 2008 – Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Risk Assessment Guidelines: Technical Support Document For the Derivation of Noncancer Reference Exposure Levels. June 2008. Accessed July 1, 2006. Accessed online at: https://oehha.ca.gov/sites/default/files/media/downloads/crnr/noncancertsdfinal.pdf.

OEHHA 2015 – Office of Environmental Health Hazard Assessment (OEHHA). Air Toxics Hot Spots Program Risk Assessment Guidelines. Guidance Manual for Preparation of Health Risk Assessments. February. Accessed on January 26, 2026. Accessed online at: https://oehha.ca.gov/media/downloads/crnr/2015guidancemanual.pdf.

OEHHA 2020 – Office of Environmental Health Hazard Assessment (OEHHA). Cancer Risk and Noncancer Hazard Index. Fact Sheet for Contaminated Sites in California. February 2015. Accessed on: January 8, 2026. Accessed online at: https://oehha.ca.gov/media/downloads/risk-assessment/fact-sheet-california-human-health-screening-levels-chhsls/riskfactsheet.pdf

OEHHA 2024 – Office of Environmental Health Hazard Assessment (OEHHA). Toxic Air Contaminants. Accessed on: March 8, 2026. Accessed online at: https://oehha.ca.gov/air/toxic-air-contaminants

NYSERDA 2023 – New York State Energy Research and Development Authority (NYSERDA). New York State Interagency Fire Safety Working Group, Air, Soil, and Water Data Findings. December 2023. Assessed March 24, 2026. Available online at: https://s3.documentcloud.org/documents/24738054/nys-data-collection-report_wsummaryr1.pdf

Solano County 2008 – Solano County. 2008 Solano County General Plan. Accessed on: January 8, 2026. Accessed online at: https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

TT 2025g – Tetra Tech (TN 263284). Air Quality and Greenhouse Gas Technical Report. Dated May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026a – Tetra Tech (TN 268258). Project Description Update #2, Part 1. Docketed January 16, 2026. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=268258&DocumentContentId=105429

ULFSRI 2020 – Underwriters Laboratories Firefighter Safety Research Institute (ULFSRI) Four Firefighters Injured In Lithium-Ion Battery Energy Storage System Explosion. Arizona. July 2020. Accessed November 24, 2025. Available online at: https://dx.doi.org/10.54206/102376/TEHS4612

U.S. EPA 2002 – United States Environmental Protection Agency (U.S. EPA). Health Assessment Document For Diesel Engine Exhaust. May 2002. Accessed on: April 8, 2026. Accessed online at: https://cfpub.epa.gov/si/si_public_file_download.cfm?p_download_id=36319&Lab=NCEA

U.S. EPA 2025a – United States Environmental Protection Agency (U.S. EPA). EPA Completes Air Monitoring Near Moss Landing Vistra Battery Fire. January 20, 2025. Accessed on: April 2, 2026. Accessed online at: https://www.epa.gov/newsreleases/epa-completes-air-monitoring-near-moss-landing-vistra-battery-fire

Van Gosen and Clinkenbeard 2011 – Van Gosen, B.S., and Clinkenbeard, J.P. (Van Gosen and Clinkenbeard). Reported Historic Asbestos Mines, Historic Asbestos Prospects, and Other Natural Occurrences of Asbestos in California: U.S. Geological Survey Open-File Report 2011-1188. Accessed on March 26, 2026. Accessed online at: http://pubs.usgs.gov/of/2011/1188/

Vistra 2025 – Vistra Moss Landing Response (Vistra). Air Quality Monitoring. Accessed on: December 2, 2025. Accessed online at: https://www.mosslandingresponse.com/air-monitoring-reports

YSAQMD 2007 – Yolo-Solano Air Quality Management District (YSADMD). Handbook for Assessing and Mitigating Air Quality Impacts. Accessed on: March 8, 2026.

Accessed online at: https://www.ysaqmd.org/wp-content/uploads/Planning/CEQAHandbook2007.pdf

5.11 Socioeconomics

This section evaluates the potential project impacts from the construction and operation of the Corby Battery Energy Storage System (BESS) Project or project with respect to Socioeconomics including population and housing, public services, and recreation. See **Section 3.0, Project Description**, of this Staff Assessment for a complete description of the project components within the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.11.1 Environmental Setting

Existing Conditions

Population and Housing

Staff considers Solano County as the study area for population and housing-related impacts and the Vallejo-Fairfield Metropolitan Statistical Area (MSA), which covers Solano County, as the setting for labor supply for the project. The workforce for both the project's construction and operation phases is expected to be mostly derived from Solano County and nearby counties, with workers commuting daily to the job site from their existing residences (TT 2024c). The county includes several unincorporated communities, in addition to the cities of Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo. Staff considers that the local workers[1] from Solano County are not likely to move temporarily (during construction) or permanently (during operations) closer to the project. The applicant has assumed that the size of the existing and projected workforce in the region is likely sufficient for covering the project's workforce, based on the environmental analysis provided in the application (TT 2024c).

Population Growth. Table 5.11-1 shows the historical and projected populations for Solano County as a whole. The county had a population of 453,491 in 2020 and decreased slightly to 449,839 by 2025. The California Department of Finance projected that Solano County will have an increased population of 482,497 in 2040, which is an increase of 6.4 percent, or 0.3 percent per year.

TABLE 5.11-1 HISTORICAL AND PROJECTED POPULATIONS

Area	2020[1]	2025[1]	2040[2]	Projected Population Change 2020-2040 Number	Projected Population Change 2020-2040 Percent (%)	Projected Population Change 2020-2040 Percent per Year (%)
Solano County	453,491	449,839	482,497	29,006	6.4	0.3

1 Workers with a greater commute (i.e., greater than 90-120 minutes from home) would be considered non-local and would tend to seek lodging closer to the project site (temporarily during construction or permanently during operations).

TABLE 5.11-1 HISTORICAL AND PROJECTED POPULATIONS

Area	2020[1]	2025[1]	2040[2]	Projected Population Change 2020-2040 Number	Projected Population Change 2020-2040 Percent (%)	Projected Population Change 2020-2040 Percent per Year (%)
California	39,538,223	39,529,101	40,968,090	929,899	2.4	0.1

Sources: [1]CA DOF 2025a, [2]CA DOF 2025b.

Housing. Table 5.11-2 presents housing supply data for the cities within proximity of the project site, the unincorporated county, plus Solano County as a whole. Year 2025 housing estimates indicate 6,687 vacant housing units within Solano County, representing a vacancy rate of 4.0 percent (CA DOF 2025a). Temporary housing is also available in the form of hotel and motel rooms, Airbnb units, campgrounds, and recreational vehicle (RV) parks.

TABLE 5.11-2 HOUSING SUPPLY ESTIMATES IN THE PROJECT AREA

Housing Supply		2025 Total	2025 Vacant
Benicia	Number	11,403	420
	Percent	100	3.7
Dixon	Number	7,241	200
	Percent	100	2.8
Fairfield	Number	42,685	1,756
	Percent	100	4.1
Rio Vista	Number	5,553	338
	Percent	100	6.1
Suisun City	Number	9,769	234
	Percent	100	2.4
Vacaville	Number	38,011	1,140
	Percent	100	3.0
Vallejo	Number	45,829	1,996
	Percent	100	4.4
Balance of County (Unincorporated)	Number	7,324	603
	Percent	100	8.2
Solano County Total	Number	167,815	6,687
	Percent	100	4.0

Source: CA DOF 2025a.

Labor Supply. Table 5.11-3 presents the California Employment Development Department 2022-2032 Occupational Employment Projections for the project's construction occupations in the Vallejo-Fairfield MSA (Solano County). The projections are estimates of the expected employment for individual occupations. For the year 2032, the total projected employment estimate of the relevant construction occupations within the project's MSA (identified in **Table 5.11-3**) would be 10,160 workers. Year 2024 unemployment rate was 5.0 percent in Solano County, compared to 5.3 percent for California (CA EDD 2025a). The industry sector employment projections estimate an 8.7 percent increase in employment between 2022 and 2032 for the construction industry as a whole (CA EDD 2025b).

TABLE 5.11-3 PROJECTED EMPLOYMENT GROWTH BY CONSTRUCTION OCCUPATION			
Vallejo-Fairfield MSA (Solano County)	**Year 2022**	**Year 2032**	**Percent Change**
Carpenters	1,130	1,220	8.0
Cement Masons and Concrete Finishers	340	350	2.9
Construction Laborers	1,710	1,860	8.8
Electricians	760	840	10.5
First-Line Supervisors of Construction Trades and Extraction Workers	1,240	1,360	9.7
Heavy and Tractor-Trailor Truck Drivers	2,260	2,880	27.4
Operating Engineers and Other Construction Equipment Operators	470	520	10.6
Painters, Construction and Maintenance	680	800	17.6
Structural Iron and Steel Workers	450	510	13.3
Other Construction and Related Workers	710	770	8.5
Plumbers, Pipefitters, and Steamfitters	410	440	7.3
Total	10,160	11,550	13.7

Note: Long-term (10 year) projections are based on annual average employment levels by industry for the base (2022) and target (2032) years. Source: CA EDD 2025b.

Public Services

The study area for public services-related impacts is Solano County. Fire and police protection services are provided to the project site from departments within Solano County. Park facilities and other public facilities such as libraries are also provided by Solano County or departments within the county. The project site is within the Dixon Unified School District boundary.

The project site would be located on a privately owned parcel, currently used as cultivated agricultural land.

Fire Protection. Fire protection services for the project site are provided by the Dixon Fire Department, working under contract with the Dixon Fire Protection District. The project site is located in an Unzoned Local Responsibility Area (LRA), which is outside of the state responsibility area (CALFIRE, 2025). The Dixon Fire Department would provide fire services to the project site. The Dixon Fire Department works under contract and partnership with the Dixon Fire Protection District. The Dixon Fire Department covers a city area of 6.7 square miles in addition to the Dixon Fire Protection District area of 313 square miles, serving approximately 25,000 residents combined. The combination department has 21 career and 3 volunteer/reserve personnel. The administration includes 1 chief, 1 deputy chief, 3 battalion chiefs, and 2 administrative personnel. (City of Dixon, 2025). Dixon Fire Station 81 is the closest to the project, located at 205 Ford Way approximately 6 miles from the Project site. The station is an all-response agency and would respond to hazardous materials incidents; it is equipped with a truck company, engine company, and water tender. Response time from Station 81 to the project site would be approximately 12 to 14 minutes (TT 2024p).

The Dixon Fire Department coordinates with Vacaville Fire Department under a joint agency contract that authorizes the closest agency to respond to an incident first or to

support the Dixon Fire Protection District if required. The Vacaville Fire Department may also respond to incidents at the project site. The closest Vacaville Fire Department station is 73, approximately 2.25 miles from the project site.

In a discussion between staff, City of Dixon Fire Chief, and Consultant to City of Dixon Fire Department, Chief Randy Shafer said that the current full-time and volunteer firefighter staffing at the stations that would respond to the proposed project are up to his standards. Additionally, he notes the department is fully staffed, three over-hire positions are currently being filled, and the existing physical infrastructure would be adequate (CEC 2025g).

Police Protection. Police protection for the project is provided by the Solano County Sheriff's Office. The responding station is located at 530 Union, Fairfield. The Sheriff's County dispatch number is the for the dispatch center for unincorporated Solano County, which would dispatch Dixon or Vacaville Fire for emergency response (TT 2024p). The Solano County Sheriff's Office is responsible for providing public safety services in the county, including patrol, investigations, and custody of adult offenders, and overseeing the Coroner's Office, Animal Care/Control, and the Office of Emergency Services (OES). The Sheriff's Department is budgeted for 555 full-time equivalent employees (FTE) in 2024-2025 (Solano County 2024). The County's 2024/2025 recommended budget funds 29 FTE positions for Emergency Services,[2] and 172 FTEs for Field Operations.[3] Staffing continues to be a concern at the Sheriff's Office. As of April 2024, the Sheriff's Office has over 59 vacancies, including 19 Correctional Officers, 12 Deputy Sheriffs, 10 Sheriff's Security Officers, and 6 Legal Procedures Clerks, a 10.1 percent vacancy rate (Solano County 2024).

Schools. The project site is located within the Dixon Unified School District (DUSD). DUSD has 3,063 students enrolled throughout three elementary schools, one middle school, and two high schools (DUSD 2025).

The nearest public schools to the project site are (DUSD, 2025; VUSD, 2025):

2 Emergency Services includes the central coordination in all County disaster events, establishment of an emergency operations plan, provision of direction to first responders, and enlistment of aid from various State and local agencies; coordination of local search and rescue efforts; dispatch of Field Operations personnel to calls for service, and dispatch of local fire personnel and equipment through the consolidated fire dispatch center.

3 Field Operations includes the protection of county residents in unincorporated areas and their property through prevention and detection of criminal activity and apprehension of those responsible for the crime; safety and enforcement of Solano County waterways; crime scene investigations; evidence collection and storage; cold-case investigations; narcotics investigations; management of the automated biometrics identification system; maintenance and implementation of its automated systems; compliance checks of post-release community supervision clients; mutual aid response; building and perimeter security services to the Courts; law enforcement and security services to the City of Rio Vista and other County departments; transportation of inmates to and from court, State prison facilities, other County jail facilities, and medical appointments; and death investigations and autopsies.

- Cooper Elementary School, located at 750 Christie Drive, Vacaville, approximately 3 miles southwest of the project site (part of Vacaville United School District)
- Tremont Elementary School, located at 355 Pheasant Run, Dixon, approximately 5 miles northeast of the project site

The DUSD requires developer fees on residential and commercial/industrial development for the purpose of funding the construction or reconstruction of school facilities. The authority for the district's assessment of developer fees is set forth in Education Code Section 17620, pursuant to Government Code 65995. New rates came into effect June 17, 2024, which include $0.84 per sq. ft. for commercial/industrial buildings (DUSD 2024). The applicant also stated that considering that the project is not a residential, commercial, or industrial development, and would not result in the development of new building square footage, no school impact fees would apply to the project (TT 263281). The proposed BESS structure and related facilities would not be considered "occupiable" buildings. No plumbing for a restroom, etc. would be installed. The DUSD confirmed that the project would be waived from developer fees (CEC 2026g).

Parks and Recreation. Parks and recreation opportunities in Solano County include local, regional, and state parks; open space; bike paths; fishing; and camping. These facilities are operated by Solano County Parks and the City of Vacaville Parks and Recreation (City of Vacaville, 2025; Solano County, 2025; California State Parks, 2025). Small, local, and regional parks in the area closest to the project include the following:

- Corderos Park, approximately 1.5 miles from the project site (part of Vacaville Parks and Recreation);
- Ridgeview Park, approximately 3 miles from the project site (part of Vacaville Parks and Recreation);
- Browns Valley Park, approximately 4 miles from the project site (part of Vacaville Parks and Recreation); and
- Centennial Park, approximately 3.5 miles from the project site (part of Vacaville Parks and Recreation)

Larger regional recreational areas within 10 miles of the project site include Lake Solano County Park and Campground (approximately 9 miles from the project site) and Lagoon Valley Park (approximately 7 miles from the project site)

Other Public Facilities. Public library services are provided by the Solano County Libraries. The Solano County Libraries system has eleven locations. Vacaville Cultural Center Library is the closest library to the project site, approximately 4 miles southwest (Solano County Library, 2025).

Regulatory

Federal

No federal regulations related to Socioeconomics apply to the project.

State

California Education Code, 17620. The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.

California Government Code, Sections 65995-65998. Except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

Local

Solano County General Plan. The Solano County General Plan was adopted by the Solano County Board of Supervisors on August 5, 2008. The General Plan is the guide for both land development and conservation in the unincorporated portions of the county. It contains the policy framework necessary to fulfill the community's vision for Solano County in 2030; a sustainable place with a thriving environment and an economy that maintains social equity. This theme of sustainability is carried throughout the plan in its goals, policies, and programs.

Housing Element. California Housing Element law requires every jurisdiction to prepare and adopt a housing element as part of general plans. The 2023-2031 Housing Element was adopted February 6, 2024.

- **Objective H.** Enhance and preserve the environmental quality of residential areas.
    - **Policy G.2:** The County shall seek to preserve the rural character, flavor, and identity of its residential communities.
- **Objective I.** Promote energy conservation in new and existing residential units.
    - **Policy H.2:** The County shall encourage improvements in the energy efficiency of existing residential structures through the installation of cost-effective conservation measures.
- **Goal PF.G-1:** Provide adequate public services and facilities to accommodate the level of development planned by the County.
- **Goal PF.G-2:** Ensure that residents throughout Solano County have access to essential public facilities and services.
    - **Policy PF.P-2:** Require new development and redevelopment to pay its fair share of infrastructure and public services costs.

- **Goal PF.G-3:** Provide effective and responsive fire and police protection, and emergency response service.
  - **Policy PF.P-39:** Identify and require incorporation of fire protection and emergency response measures in the review and approval of new projects.
    - Implementation Program PF.I-35: Coordinate with the fire districts and CAL FIRE during project review to ensure that all new development incorporates appropriate fire-safety techniques, including fire-safe building materials, early-warning systems, adequate clear spaces and fuel reduction, adequate escape routes and facilities, fire breaks, and sufficient water supply systems for fire suppression.
  - **Policy PF.P-41:** In the review and approval of County and City projects, identify and consider the law enforcement needs generated by the project.
    - Implementation Program PF.I-42: Coordinate with the sheriff to identify and consider the impact on law enforcement services during project review.
  - **Policy PF.P-49:** Use parallel or existing rights-of-way for gas, electric, and telephone utility alignments in a manner that avoids heavily developed areas.
  - **Policy PF.P-50:** Locate, design, and construct transmission lines in a manner that minimizes disruption of natural vegetation, agricultural activities, scenic areas, and avoids unnecessary scarring of hill areas.

Solano County Ordinance 2025-1864. On November 4, 2025, Solano County enacted Ordinance 2025-1864 that included the addition of Section 28.83 Battery Energy Storage Systems to Article III of Chapter 28 of the Solano County Code. Additions include section 28.83 F focused on "Impact Mitigation Measures" as follows:

A BESS applicant may be subject to mitigation measures at the discretion of the County including, but not limited to, the following. The County may exempt a BESS applicant from the following mitigation measures if a determination is made that the proposed battery chemistry does not have a risk of thermal runaway.

1. Annual contribution for fire response equipment as deemed necessary by the Solano County Office of Emergency Services to respond to a BESS emergency event. System manufacturer shall provide a list of recommended equipment for addressing a thermal runaway incident.
2. Annual contribution for training of all Solano County emergency response agencies and mutual aid partners for BESS emergency response, as determined by the County.
3. Contribution to radio interoperability to assist in efficient and effective BESS emergency response, as determined by the County.
4. Contribution to support a consolidated fire and medical public safety answering point for efficient and effective BESS emergency response, as determined by the County.

5. Confirmation that point of sale for all BESS project equipment is located in unincorporated Solano County.

Vacaville General Plan. The Vacaville General Plan provides a vision for the future and establishes a framework for how Vacaville should grow and change over the next two decades. The plan was adopted in 2016 and is intended to guide the City's actions through the year 2035.

Housing Element. The 2023-2031 Housing Element was adopted on June 27, 2023.

- **Goal HE.1:** New Construction. To meet existing and projected housing needs, facilitate the construction of a wide variety of housing types, for various income levels, in a manner that promotes environmental responsibility and long-term sustainability.
  - **Policy HE.1-GP 7:** Establish development and construction standards that encourage energy conservation in residential areas.
- **Goal HE.2:** Rehabilitation and Conservation. Conserve and improve the condition of the existing housing stock to enhance the livability of neighborhood(s) for all residents.
  - **HE.2-GP 2:** Support energy-conserving programs in the rehabilitation of affordable housing to reduce household energy costs, improve air quality, and mitigate potential impacts of climate change in the region.
- **Goal PUB-1:** Provide adequate fire, rescue, and emergency medical services to serve existing and new development.
  - **Policy PUB-P1.1:** Prohibit any development that will not, even with identified mitigation measures, maintain standards for fire, rescue, and emergency medical service. All service standards shall be met prior to project occupancy. Allow exceptions to these services standards only when there are overriding findings of special circumstances or economic or social benefits.
  - **Policy PUB-P1.4:** Identify and mitigate fire hazards during the project review and approval process.
- **Goal PUB-2:** Maintain a safe environment in Vacaville through the enforcement of the law.
  - **Policy PUB-P2.1:** Maintain adequate police staffing, performance levels, and facilities to serve Vacaville's existing population as well as any future growth.
  - **Policy PUB-P2.4:** Identify and mitigate law enforcement hazards during the project review and approval process by incorporating passive environmental measures such as enhanced lighting and safety in public spaces and adequate property maintenance.

Solano County Public Facilities Fees. Solano County's Public Facilities Fees are an impact fee. An impact fee is a commonly used and well-accepted means for mitigating

the impacts created by future growth. Public agencies regularly levy impact fees on new development to fund a variety of public facilities. Solano County has an established, successful Public Facilities Fee (PFF) program. Its success is due in part to the County's investment in new facilities, use of debt financing, and timely provision of facilities to maintain the County's quality of life.

Government Code section 66000, et. seq. provides for the establishment and collection of Public Facilities Fees to fund County facilities to meet future county growth requirements. Solano County Public Facilities Fee is also authorized by Chapter 11, Article X of the Solano County Code and Resolution 2019-156 as adopted by the Solano County Board of Supervisors. See fee schedule at https://www.solanocounty.com/depts/rm/buildingnsafety/public_facilities_fees.asp

Cumulative

Geographic Extent

The geographic scope for the analysis of cumulative impacts on socioeconomics is Solano County. This is defined as the cumulative impact area because socioeconomic factors such as public services are provided by local jurisdictions or districts, and available housing is located within Solano County. Additionally, the local workforce is expected to come from within Solano County.

Existing Cumulative Conditions

Past development and population growth within Solano County have impacted the population, housing, and public services within the county. When the population increases because of development, the housing demand, workforce, and public services expand to accommodate the growing population and development needs. As discussed in subsection 5.11.1, population has decreased over the past few years. According to the California Department of Finance, it is projected to increase until 2040. Between 2025 and 2040, the population is predicted to increase by 7.3 percent (CA DOF 2025a, b). As shown in **Table 5.11-3**, construction occupations in the region are anticipated to grow at a similar rate as the population.

Construction and operation of the proposed project in conjunction with the projects described in **Appendix A, Cumulative Scenario** could result in the potential for impacts to population, housing, and public services in the county. While it is not expected that the operation of the energy projects listed would substantially change the population and housing dynamics in the county, the number of construction projects described in **Appendix A, Cumulative Scenario** would have the potential to impact population trends and could be cumulatively considerable.

Projects. The project description provided by the applicant anticipates the construction to take approximately 14-15 months.

Only those related projects under construction during that period would be considered for cumulative impacts of the construction population on housing and public services. All projects in **Table A-1** of **Appendix A, Cumulative Scenario** are located within the geographic scope for socioeconomic cumulative effects, and thus are considered for co-location impacts.

5.11.2 Environmental Impacts

SOCIOECONOMICS	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	☐	☐	☒	☐
b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				
i. Fire protection?	☐	☒	☐	☐
ii. Police Protection?	☐	☐	☒	☐
iii. Schools?	☐	☐	☐	☒
iv. Parks?	☐	☐	☐	☒
v. Other public facilities?	☐	☐	☐	☒
d. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	☐	☐	☐	☒
e. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, population and housing, public services, and recreation.

5.11.2.1 Methodology and Thresholds of Significance

For the Socioeconomics issue area, beyond the above CEQA environmental checklist items, there are no applicable methodologies or additional thresholds of significance applicable to this project. Significant impacts are determined on an individual basis depending on the magnitude of the effects. An example of a potentially significant impact for this area would be the need for a new fire or sheriff's station, as determined by public safety authorities.

5.11.2.2 Direct and Indirect Impacts

a. Would the project induce substantial unplanned population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?

Construction

Less Than Significant Impact. The proposed project would not directly or indirectly induce substantial unplanned growth in Solano County. The project does not propose new housing, and it would not facilitate growth through the extension of roads, water supply pipelines, or other growth-inducing infrastructure. The project includes a 300-megawatt (MW), 1,200-megawatt-hour (MWh) battery energy storage system (BESS), associated project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, on-site roads, optional groundwater well, water tank, stormwater retention basins, storage containers, and a supervisory control and data acquisition (SCADA) system. Although the project may increase the reliability of local electricity service, it would not be an extension of infrastructure serving customers. Therefore, there would be no indirect population growth.

Construction of the proposed project is anticipated to last 14 or 15[4] months and employ an average of 80 construction workers. There would be an estimated peak of approximately 131 workers on-site during the peak construction month (TT 2025a). Based on the temporary nature of construction projects and the projected employment estimates reported in **Table 5.11-3**, staff concludes that the region is expected to have an adequate supply of construction trades workers for the project.

With a local construction workforce likely available to serve the project, it is expected that most workers would come from the area surrounding the site. Few if any construction workers are expected to seek temporary lodging closer to the project site. If a few construction workers were to seek temporary or permanent lodging closer to

4 Groundwater well development, if required, will begin one month earlier and expand the overall duration to 15 months.

the project site, there would be sufficient housing supply (see **Table 5.11-2**) in addition to nearby RV parks, hotels/motels, and campsites. Therefore, the project's construction workforce would not directly or directly induce substantial population growth in the project area. The population and housing impact from project construction would be less than significant.

Operation

Less Than Significant Impact. The proposed project would create a relatively low number of permanent jobs, with an anticipated 6 full-time employees per year over the 30-year expected lifetime of the project required to support onsite and offsite O&M and administrative support functions. No permanent operations staff would be located at the project site, as the project would be controlled from an offsite control room. The operations workforce is expected to be hired from outside Solano County.

One major maintenance inspection would take place annually, requiring approximately 20 personnel for approximately one week. In addition, approximately every 2 to 3 years the facility would require battery augmentation to maintain project capacity; a crew of approximately 20 additional workers would be onsite for approximately 3 months to install and connect additional batteries. This work is temporary in nature, and these employees are unlikely to permanently relocate to the project site.

While operation of the project would be remote, the six workers employed to support onsite and offsite maintenance may choose to relocate to be closer to the project. However, even if all workers were to permanently relocate closer to the project, it is unlikely that these few workers would directly or indirectly induce a substantial population growth in the project area. The impact from project operation would be less than significant.

b. Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?

Construction and Operation

No Impact. The proposed project is on private land used as agricultural land for row crops. No population lives within the project site. As a result, the project would not displace any people or housing, and both construction and operation of the project would not require replacement housing to be constructed elsewhere. No impact would occur.

c. Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable

service ratios, response times, or other performance objectives for any of the public services:

i. Fire protection?

Construction

Less Than Significant Impact. The project would require a temporary construction workforce. As stated in the application, there would be approximately 131 workers on-site during peak construction. Construction would last approximately 14-15 months. As discussed in subsection 5.11.1, the anticipated construction workforce for the project would likely be drawn from Solano County. Based on the proximity of the anticipated workforce to the project, construction workers from neighboring cities and counties are not likely to temporarily move closer to the project site.

Therefore, this workforce is unlikely to increase the need for residential area fire services due to an in-migration population. Additionally, any changes to service ratios as a result of the project's construction phases would be temporary and would not result in the need for new or physically altered fire protection facilities such as an additional fire station. Impacts would be less than significant.

Operation

Less Than Significant with Mitigation Incorporated. The six full-time employees for project operation would not be required to go onsite regularly, as the project would be operated remotely, and thus it is unlikely to affect service ratios as a result of in-migration from the project's operation. The operations workforce is expected to be hired from outside Solano County. The operations workers would be remote. Even if all six workers relocated to live in Solano County, it is unlikely that there would be an increase in the need for fire protection services or an effect on service ratios.

The 20 workers required for the annual inspection would only be needed for one week and thus would not be moving permanently to the project site. Similarly, the 20 additional workers needed every two to three years would be needed for approximately three months. These workers may temporarily move closer to the project site, but this effect would be small and temporary. It is unlikely there would be an increase in the need for fire protection services from the in-migration of these workers.

Given the small number of operational employees, it is also very unlikely that new or physically altered fire facilities would be necessary. The few potentially relocated workers would be within the range of the projected populations for the County. As a result, impacts would be less than significant due to population in-migration.

Project operation and maintenance may introduce potential ignition sources such as transformers, gen-tie line, switchyard, and maintenance vehicles. As discussed in **Section 3.0, Project Description**, battery components for the BESS system would be installed on concrete pads or driven piles and contained within an enclosure to minimize

the potential for sparks or ignition. All such enclosures would be equipped with a fire safety system and be in conformance with the Dixon Fire Protection District and Solano County regulations. In the event of a fire, Dixon Fire Station 81 is an all-response agency and equipped to respond to hazardous materials incidents. Specific mitigation for fire is discussed in **Section 4.4, Worker Safety and Fire Protection** and **Section 5.7, Hazards, Hazardous Materials, and Wildfire**.

As discussed in the analysis in **Section 4.4, Worker Safety and Fire Protection**, a BESS fire at the project site would have a significant impact on the DFD by requiring resources and personnel for an extended period of time. This would lead to an increased demand on fire protection service provision from the DFD and the surrounding supporting mutual aid fire departments. This impact could be mitigated by COC **WORKER SAFETY-7**, which includes the provision of new access, equipment, assets, and safety protocols. The project also would require additional staffing for DFD to add a new fire company to staff station 82 to avoid increased response time to an emergency within DFD's jurisdiction, which would create financial hardship for the DFD. Implementation of COC **WORKER-SAFETY-10** would ensure that DFD receives funding for station 82 to help reduce the fire protection demands placed on DFD to a less-than-significant level.

ii. Police protection?

Construction

No Impact. The project's construction would not generate substantial population growth in the project area that would result in the need for additional police/sheriff's protection facilities for new residents. Based on the proximity of available construction workforce to the project, construction workers from neighboring cities or counties are not likely to temporarily relocate closer to the project site. However, if some workers were to temporarily relocate closer to the project, it is unlikely that there would be an increase in the need for police/sheriff's services. Similarly, it is unlikely that there would be an effect on service ratios to the extent that new or physically altered police/sheriff's protection facilities would be necessary.

The applicant stated there that the facility would be secured with a six-foot-tall chain-link fence above-grade topped with one foot of three-strand barbed wire along the perimeter of the project site. Additionally, access to the facility would be provided by a gate entry point; motion-controlled security lighting would be installed and allow for the site to be monitored remotely; and lights would be installed at the primary access gates, the onsite substation, and the entrance to the energy storage structure for maintenance and security purposes (TT 2024c). The project could potentially cause a relatively small, incremental increase in police/sheriff's protection services due to security issues during construction. Even though the County is facing challenges with staffing, any small increase of need in protection services would be temporary and is not expected to require new or expanded police/sheriff's protection facilities to maintain

acceptable service ratios, response times or other performance objectives for protection services. As such, impacts would be less than significant.

Operation

No Impact. The project's operation would require a small number of full-time employees to support onsite and offsite O&M (six full-time employees per year), and thus it is unlikely to affect service ratios as a result of the project's operation. The operations workers are unlikely to relocate closer to the project site, and even if all six workers relocated, it is unlikely that there would be an increase in the need for police/sheriff services or an effect on service ratios. Given the small number of operational employees, it is very unlikely that new or physically altered police/sheriff's facilities would be necessary. The few potentially relocated workers would be within the range of the projected populations for the county. No impact from operations would occur.

iii. Schools?

Construction

No Impact. The project would be located within the Dixon Unified School District. Based on the number and proximity of the available workforce for the project, construction workers from the surrounding cities and counties are not likely to temporarily relocate closer to the project site. Based on staff's experience, construction workers who seek lodging closer to the project site do not bring their families with them. Therefore, construction workers who might temporarily relocate closer to the project site would not increase the need for school facilities or have an effect on service ratios to the extent that new or physically altered school facilities would be necessary. Therefore, no impact would result from construction.

Operation

No Impact. There would be a small number of operational employees, and there would be no permanent staff located at the project site. Therefore, operation workers from outside the Solano County region are not likely to permanently relocate to the project site. However, if some or all of the six workers were to permanently relocate closer to the project, it is unlikely that there would be an increase in the need for schools or an effect on service ratios to the extent that new or physically altered school facilities would be necessary. As no new physically or altered school facilities would be needed, no impact would result from operation.

iv. Parks?

Construction

No Impact. Based on the proximity of available construction workforce to the project, the construction workforce would likely be drawn from Solano County, and few workers would temporarily relocate closer to the project site. Based on staff's experience, workers who may relocate closer to the project usually return to their primary residence

during the weekends. Temporary construction workers may visit park facilities before, during, or after a workday, but this would not result in many people visiting these facilities. Additionally, this would be a short-term use that would cease at the end of the project's construction period. It is unlikely that there would be an increase in the usage of, or demand for, park facilities to maintain acceptable service ratios or other performance objectives. As there would be no need for new or physically altered park facilities, no impact would result from construction.

Operation

No Impact. The project would be a low employment-creating use and would not generate substantial population growth in the project area that would result in the need for additional park facilities for new residents. If some or all of the six operations workers were to relocate permanently closer to the project, it is unlikely that there would be an increase in the usage of, or demand for, parks to maintain acceptable service ratios or other performance objectives to the extent that new or physically altered parks would be necessary. As there would be no new or physically altered park facilities, no impact would result from operation.

v. Other public facilities?

Construction

No Impact. Based on the proximity of available construction workforce to the project, the construction workforce would likely be drawn from Solano County, and few workers would temporarily relocate closer to the project site. However, if some construction workers were to temporarily relocate, they are not likely to visit public facilities such as public libraries while working in the project area. Based on staff's experience, these workers typically return to their primary residence over the weekend. Temporary construction workers are unlikely to visit public libraries in the project vicinity before, during, or after a workday.

If some of the temporary construction workers were to visit the public libraries, this would not result in many people visiting these facilities and would be a short-term use that would cease at the end of the project's construction period. It is unlikely that there would be an increase in the usage of, or demand for, other public facilities to maintain acceptable service ratios or other performance objectives. As no new or physically altered public facilities such as libraries would be required, no impact would result from construction.

Operation

No Impact. The project would not generate substantial population growth in the project area that would result in the need for additional public facilities or services for new residents. No permanent staff would be located at the project site. However, if some or even all operations workers were to relocate permanently, it would be unlikely that there would be an increase in the usage of, or demand for, the surrounding libraries or

other public facilities. As no new or physically altered public facilities such as libraries would be required, no impact would result from operations.

d. Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

Construction

No Impact. Similar to the conclusion above for Parks and Other Public Facilities, given the proximity of available construction workforce to the project, the construction workforce would likely be drawn from Solano County. Few, if any, workers from another county are likely to temporarily relocate closer to the project site. However, if some construction workers were to temporarily relocate, they may visit park or recreational facilities before, during, or after a workday. This would not result in many people visiting these facilities and would be a short-term use that would cease at the end of the project's construction period. It is unlikely that there would be an increase in the usage of, or demand for, other park or recreational facilities to maintain acceptable service ratios or other performance objectives. An increase in the usage of parks or other recreational facilities, such that substantial physical deterioration of the facility would occur or be accelerated, is unlikely. Therefore, no impact would result from construction.

Operation

No Impact. Because the project would be a low employment-creating use, with no permanent staff located at the project site, the proposed project would not generate substantial population growth in the project area that would result in the need for additional park or recreational facilities for new residents. If some or all operation workers were to relocate permanently closer to the project, it is unlikely that there would be an increase in the usage of, or demand for, parks or other recreational facilities to maintain acceptable service ratios or other performance objectives. As no new or physically altered park facilities would be necessary, no impact would result from operation.

e. Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

Construction and Operation

No Impact. Recreation facilities are not included as part of the project, and the project would not require the construction or expansion of a recreation facility. The project is on private property currently used as agricultural land. The few workers that could relocate closer to the project site temporarily or permanently would not create the need for new or expanded recreational facilities to serve them. As no new or expanded recreational facilities are needed, no impact would result.

5.11.2.3 Cumulative Impacts

The proposed project would not have a significant contribution to existing cumulative effects, as described below. Cumulative socioeconomics impacts could occur when more than one project has an overlapping construction schedule that creates a demand for workers that cannot be met by the local labor force, resulting in an influx of non-local workers and their dependents. Operational cumulative socioeconomics impacts could occur when the development of multiple projects significantly impacts the population of an area, resulting in a housing shortage, change in local employment conditions, and an increased demand on public services or recreational facilities.

Construction and Operation

Less Than Significant. Construction of projects listed in **Appendix A, Table A-1** may need to use workers that would come from the same labor pool as the proposed project. As discussed in section 5.11.1, the local workforce in Solano County would be likely to accommodate the construction for the proposed project. With an adequate number of construction workers in the county, and anticipated growth, there would be a less than significant cumulative effect, even if the construction phase overlapped with other projects.

While the construction of other projects may require the use of transient housing, there is an adequate number of available temporary housing that would likely be able to accommodate these construction workers for concurrent projects. Several of the projects listed in **Table A-1** may not have timelines that overlap, and the possibility of a future project being proposed, approved, and constructed during the same time frame and within the same geographic extent is not known with any accuracy at this time. The proposed project is not likely to combine with most other identified projects to create a considerable cumulative impact to population and housing given the existing availability of temporary and permanent housing in the county that could accommodate construction workers moving into the area. Additionally, the projected population growth during the timing of construction of the proposed project would be able to accommodate some workers moving into the county, and thus not likely contribute to a significant cumulative impact on population, housing, or increased demand on public services or recreational facilities.

As discussed in subsection 5.11.2.2, the proposed project's small operational workforce would have no permanent staff located at the project site, with no population in-migration expected to increase the local population. Therefore, it would not contribute to cumulative increases in population that would generate an increase in demand for local housing, local public services, or recreational facilities.

5.11.3 Project Conformance with Applicable LORS

Table 5.11-4 presents staff's determination of conformance with applicable local, state, and federal laws, ordinances, regulations, and standards (LORS), including any proposed conditions of certification, where applicable, to ensure the project would

comply with LORS. No federal regulations related to socioeconomics apply to the project.

TABLE 5.11-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Consistency and Basis For Determination**
State	
California Government Code, sections 65995-65998, California Education Code, section 17620	
Government Code section 65995 states in part that, except for a fee, charge, dedication, or other requirement authorized under Section 17620 of the Education Code, state and local public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities. Section 17620 states in part that the governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement against any construction within the boundaries of the district, for the purpose of funding the construction or reconstruction of school facilities.	**Yes.** Dixon Unified School District (USD) has jurisdiction over the proposed project area and would be the implementing agency for this code section. Dixon USD has indicated that because the proposed project has no occupied buildings, they would not levy a fee. Therefore, the proposed project is consistent with this government code.
Local	
Solano County Public Facilities Fees, Chapter 11, Article X of the Solano County Code and Resolution 2019-156 as adopted by the Solano County Board of Supervisors	
The County is authorized to seek reimbursement for "permit fees, including public facilities fees (CEC 2024l). The fee schedule is at https://www.solanocounty.gov/government/resource-management/building-safety-services/about-building-safety-services/public-facilities-fees	**Yes.** Solano County has an established Public Facilities Fee program for the County to invest in new facilities, use of debt financing, and timely provision of facilities to maintain the County's quality of life. Government Code section 66000, et. seq. provides for the establishment and collection of Public Facilities Fees to fund County facilities to meet future county growth requirements. Solano County Public Facilities Fee is also authorized by Chapter 11, Article X of the Solano County Code and Resolution 2019-156 as adopted by the Solano County Board of Supervisors. The proposed project is an industrial facility, and is subject to Solano County Public Faculties Fees. Staff recommends Condition of Certification (COC) SOC-1 to ensure that project is consistent with the requirements of Chapter 11, Article X of the Solano County Code. With implementation of COC SOC-1, the project would be in compliance with this requirement.
Dixon Unified School District, Board Resolution 24-6718 (passed on April 18, 2024.) (Ed. Code, § 17620, pursuant to Gov. Code, § 65995.)	
The governing board of any school district is authorized to levy a fee, charge, dedication, or other requirement for the purpose of funding the construction or reconstruction of school facilities.	**Yes.** Based on staff coordination calls with the Dixon USD, a fee would not apply to the proposed project. The contact person for the Dixon USD has stated that the fee does not apply to the proposed Corby BESS project because it would not have any occupied buildings (CEC 2026).

5.11.4 Conclusions and Recommendations

As discussed above, the project would have a less than significant impact related to socioeconomics and would be consistent with applicable laws, ordinances, regulations, and standards. Staff recommends COC **SOCIO-1** to satisfy Solano County's Public Facilities Fees requirement. In addition, COCs **WORKER SAFETY-7** and **WORKER SAFETY-10** would mitigate impacts to public services as discussed above in Section 5.11.2.1 and **Section 4.4, Worker Safety and Fire Protection**.

5.11.5 Proposed Conditions of Certification

In addition to COCs **WORKER SAFETY-7** and **WORKER SAFETY-10**, the following proposed COC would ensure conformance with Socioeconomic LORS, where applicable.

SOCIO-1 Per the requirements of the Solano County Code and Resolution 2019-156, Chapter 11, Article X, the project owner shall pay a one-time Public Facilities Fees prior to the start of project construction. The project owner shall coordinate with Solano County to provide the County with the information required to calculate the amount due, pay the fee, and obtain proof of payment.

Verification: At least 30 days prior to the start of project construction, the project owner shall provide proof of payment of the Public Facilities Fees to Solano County to the Compliance Project Manager.

5.11.6 References

CEC 2024l – California Energy Commission (TN 260721). CEC's Response to Solano County's Request for Reimbursement. Docketed December 18, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2025g – California Energy Commission (TN 265026). ROC- Coordination with Local Fire Department. Docketed July 28, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CAL FIRE 2025 – CAL FIRE. Solano County – Unincorporated LRA: Local Responsibility Area Fire Hazard Severity Zone. February 24, 2025. Accessed online at: https://calfire.app.box.com/s/wahuw9ny7cgn89xpxh7092ur50r1pwvj/file/1785856297957

CA EDD 2025a – Employment Development Department, State of California (CA EDD). Unemployment Rates (Labor Force). Accessed on: March 31, 2025. Accessed online at: https://labormarketinfo.edd.ca.gov/cgi/dataanalysis/AreaSelection.asp?tableName=labforce&geogArea=0604000095

CA EDD 2025b – Employment Development Department, State of California (CA EDD). Labor Market Information Division, 2022-2032 Occupational Employment Projections, Vallejo-Fairfield Metropolitan Statistical Area, (Solano County), data

last updated March 2025. Accessed on: June 27, 2025. Accessed online at: https://labormarketinfo.edd.ca.gov/data/employment-projections.html

CA DOF 2025a – California Department of Finance (CA DOF). E-5 Population and Housing Estimates for Cities, Counties and the State — January 1, 2021-2024. Sacramento, California, May 2025. Accessed on: July 24, 2025. Accessed online at: https://dof.ca.gov/forecasting/demographics/estimates/e-5-population-and-housing-estimates-for-cities-counties-and-the-state-2020-2025/

CA DOF 2025b – California Department of Finance (CA DOF). Demographic Research Unit. Report P-2A: Total Population Projections, California Counties, 2020-2070 (Baseline 2023 Population Projections; Vintage 2025 Release). Sacramento, California, September 2025. Accessed on: January 22, 2026. Accessed online at: https://dof.ca.gov/forecasting/demographics/projections/

California State Parks 2025 – California State Parks. Find a California State Park. Accessed on: April 25, 2025. Accessed online at: https://www.parks.ca.gov/Find-a-Park

City of Dixon 2025 – City of Dixon. About the Dixon Fire Department. Accessed on: April 25, 2025. Accessed online at: https://www.cityofdixonca.gov/departments/Fire/AbouttheDixonFireDepartment

City of Vacaville 2025 – City of Vacaville. Vacaville Parks and Fields. Accessed on: April 25, 2025. Accessed online at: https://www.cityofvacaville.gov/government/parks-and-recreation/parks-fields

DUSD 2025 – Dixon Unified School District (DUSD). Dixon Unified School District. Accessed on: April 25, 2025. Accessed online at: https://www.dixonusd.org/

DUSD 2024 – Dixon Unified School District (DUSD). Developer Fees. Accessed on: April 25, 2025. Accessed online at: https://drive.google.com/file/d/1HrSE8vgvwr-sBNAEgM3uFFO8-bsavo5W/view

Solano County 2024 – Solano County. Fiscal Year 2024/2025 Recommended Budget. H – Public Protection. Accessed on: April 16, 2025. Accessed online at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=43028

Solano County 2025 – Solano County. City and County Parks. Accessed on: April 25, 2025. Accessed online at: https://www.solanocounty.com/depts/rm/countypark/all/

Solano County Library 2025 – Solano County Library. Hours and Locations. Accessed on: June 26, 2025. Accessed online at: https://solanolibrary.com/hours-and-locations/

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024p – Tetra Tech (TN 259897). Volume 2 App 4-15 Public Services Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025a – Tetra Tech (TN 262554). Project Description Update. Docketed April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025d – Tetra Tech (TN 263281). Data Request Responses Set #2 Part 1. Docketed May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

VUSD 2025 – Vacaville Unified School District (VUSD). Vacaville Unified School District. Accessed April 25, 2025. Accessed online at: https://www.vacavilleusd.org/

5.12 Solid Waste Management

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to solid waste management. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.12.1 Environmental Setting

Solid Waste Facilities

The following materials recovery facilities (MRF) and landfills are within a 50-mile radius of the project site that could be utilized for the project (CalRecycle 2025):

- Jepson Prairie Organics Composting Facility (SWIS No. 48-AA-0083) – Permitted daily throughput 750 tons.
- Potrero Hills Composting Facility (SWIS No. 48-AA-0075)
- Recology Hay Road Landfill, Class II/III Facility (SWIS No. 48-AA-0002) – Permitted through 2077, remaining capacity 30,433,000 CY as of 7/28/2010, daily throughput 2,400 tons.
- Potrero Hills Landfill, Class III Facility (SWIS No. 48-AA-0075) – Permitted through 2048, remaining capacity 83,100,000 CY as of 1/1/2006, daily throughput 4,330 tons.

Regulatory

Federal

Resource Conservation and Recovery Act (RCRA), 40 CFR, Subtitle D. RCRA Subtitle D regulates the disposal of non-hazardous waste. It includes guidelines for the storage and collection of residential, commercial and institutional solid waste (Part 243), and source separation for material recovery (Part 246) design of municipal solid waste facilities (Part 258).

State

Integrated Waste Management Act (PRC Section § 40000). The Integrated Waste Management Act of 1989 established the California Integrated Waste Management Board (CIWMB), revamped the government codes regulating solid waste management, and required cities and counties to reduce the amount of solid waste disposed of in landfills by 50 percent. Duties of the CIWMB were transferred to the California Department of Resources Recycling and Recovery (CalRecycle) in January 2010. Under CalRecycle's oversight, counties must adopt regulations and policies to comply the requirements of the Act.

Mandatory Commercial Recycling Law (PRC Section § 42920). Public Resources Code section 41780.01 (AB 341, Chesbro, Chapter 476, Statutes of 2011) set a statewide goal of reducing solid waste by 75 percent by 2020 and annually thereafter. AB 341 CalRecycle adopted requirements for mandatory recycling of commercial solid waste by businesses which became effective on May 7, 2012 (Cal. Code Regs. tit 14, § 18837.) In addition, Public Resources Code section 42649.2 (SB 1018, Chapter 39, Statutes of 2012) requires any business generating over 4 cubic yards (CY) of solid waste per week to arrange for recycling services.

Short-Lived Climate Pollutant Reduction Law (PRC Section § 42652). Approved by the Governor on September 19, 2016, the Short-Lived Climate Pollutant Reduction Law (SB 1383, Lara, Chapter 395, Statutes of 2016) established statewide targets to reduce disposal of organic waste to 50 percent of 2014 levels by 2020 and to 75 percent of 2014 levels by 2025 and instructed the California Department of Resources Recycling and Recovery to adopt regulations to achieve these goals.

California Energy Efficiency Standards for Residential and Nonresidential Buildings – Green Building Code (2011), CCR Title 24 Update (2019). The California Green Buildings Standards Code applies to the planning, design, operation, construction, use, and occupancy of newly constructed buildings and requires energy and water-efficient indoor infrastructure. The related waste management plan is required to allow for the diversion of 50 percent of the generated waste away from the landfill.

Local

Solano County General Plan. Chapter 8, Public Facilities and Services, includes the following goal for solid waste applicable to the project (Solano County 2008):

- **Policy PF.P-27:** Require responsible waste management practices, including recycling and composting. Coordinate with service providers to compost green waste and encourage local farmers to use this.

City of Vacaville General Plan. Chapter 6, the Public Facilities and Services Element includes the following goal and policy for solid waste and recycling applicable to the project (City of Vacaville 2015):

- **Goal PUB-9:** Reduce the volume of solid waste generated in Vacaville through recycling and resource conservation.
- **Policy PUB-P9.9:** Require that construction sites provide for the salvage, reuse, or recycling of construction and demolition materials and debris

Solano County Solid Waste Ordinance

Sec. 23-20 Limitations of time of storage. Defines the time limit for solid waste (7 days), recyclable material and green waste (should be removed at a frequency that does not cause a nuisance condition) to be stored on sites within the county.

Sec. 23-22 Storage enclosures—Commercial and industrial. Solid waste, green waste and recyclables shall be stored in storage enclosures.

Sec. 23-30 Mandatory service. Commercial establishments are required to obtain mandatory services of a Contractor with the appropriate county permits.

5.12.2 Environmental Impacts

SOLID WASTE MANAGEMENT Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
a. Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?	☐	☐	☒	☐
b. Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, utilities and service systems.

5.12.2.1 Methodology and Thresholds of Significance

The solid waste facilities identified to support the project were evaluated for compliance with State solid waste management and reduction statutes, regulations and requirements, as well as assessed to determine if the proposed project would pose an undue burden on landfill capacity.

5.12.2.2 Direct and Indirect Impacts

a. Would the project generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, construction of the project, with mitigation incorporated, would have a less than significant impact on the capacity of local solid waste infrastructure.

Solid waste consisting of the following materials would be generated during the fifteen-month construction period: Concrete, metal, paper, wood, organic materials, glass and plastics. Assuming the maximum anticipated construction schedule of fifteen months, an estimated 5,000 CY of solid waste would be generated during project construction (Tetra Tech 2024). This solid waste would be diverted from landfills and recycled to the extent possible to comply with AB 341 and the Green Building Code. However, solid

waste that cannot be recycled would be disposed of in one of the two Class II/III landfills listed in the Environmental Setting section.

According to CalRecycle, the combined remaining capacity of these two landfills is over 110 Million CY (CalRecycle 2025). Assuming all the construction-related solid waste could not be recycled, the estimated amount of solid waste generated during project construction would represent 0.005 percent of the available capacity of the two listed landfills.

To ensure recycling of solid waste generated during project construction is recycled to the greatest extent possible, staff proposes a Construction Waste Management Plan as required in Condition of Certification (COC) **WASTE-1**. The Operations Waste Management Plan proposed in COC **WASTE-1** would ensure the recycling of solid waste generated during project construction to the greatest extent possible and not in excess of state or local standards.

Operation

Less Than Significant Impact with Mitigation. Based on the analysis below, operation of the project would have a less than significant impact on the capacity of local solid waste infrastructure.

Typical maintenance activities for BESS systems such as safety testing, electrical inspection, software updates, and fire suppression system maintenance are not expected to produce significant amounts of solid waste. During operation, the project would only generate solid waste during routine maintenance operations and would be of negligible quantity as there would be no regular onsite employees. This solid waste would be diverted from landfills and recycled to the extent possible to comply with AB 341 and the Green Building Code. However, solid waste that cannot be recycled would be disposed of in one of the two Class II/III landfills listed in the Environmental Setting section.

To ensure recycling of solid waste generated during project operation is recycled to the greatest extent possible, staff propose an Operations Waste Management Plan as required in Condition of Certification (COC) **WASTE-1**. The Operations Waste Management Plan would ensure the recycling of solid waste generated during project construction to the greatest extent possible and not in excess of state or local standards.

Non-Jurisdictional Project Components

Less Than Significant Impact with Mitigation. Non-jurisdictional project components include the 0.2 miles of gen-tie line between the point of change of ownership (POCO) leading into the Point of Interconnection (POI), 5 overhead transmission line structures and construction of the New Corby Bay at the Vaca Dixon Substation. These components would be constructed and operated by PG&E under California Public Utilities Commission (CPUC) permitting. According to the project application, the

expected solid waste production for the construction of these components would be of similar quantity to the Corby BESS project construction and would be regulated under the same local state and federal requirements. Solid waste production during operation would be minimal as these components would not require on-site staff and would only produce solid waste during maintenance activities. With the incorporation of recommended mitigation measure **MM WASTE-1**, solid waste generated during construction would be recycled to the greatest extent possible. For these reasons, the impact to the solid waste capacity of the local landfills would be less than significant.

b. Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste?

Construction and Operation

No Impact. Based on the analysis below, construction and operation of the project would comply with federal, state and local solid waste regulations and have no impact.

The California Integrated Waste Management Act of 1989 (Assembly Bill 939) requires local jurisdictions in California to reduce, by 50 percent, the amount of solid waste disposed of in landfills by the year 2000 and beyond. During project construction, solid waste would be collected and hauled off-site for recycling or disposal in local jurisdictions within Solano County that have programs in place to ensure that disposal of solid waste complies with state requirements. Implementation of COC **WASTE-1** would ensure the recycling of solid waste generated during project construction and operation to the greatest extent possible. The project would not generate any special or unique wastes during the construction phase that would make the project not comply with federal, state, and local statutes or solid waste management and reduction regulations.

Management of hazardous waste along with applicable federal regulations are discussed in **Section 5.7, Hazards, Hazardous Materials, and Wildfire**.

Non-Jurisdictional Project Components

Construction

No Impact. Non-jurisdictional project components include the 0.2 miles of gen-tie line between the point of change of ownership (POCO) leading into the Point of Interconnection (POI), 5 overhead transmission line structures and construction of the New Corby Bay at the Vaca Dixon Substation would be under PG&E jurisdiction. During construction of the PG&E controlled gen-tie transmission lines, solid waste generation is expected to be minimal and not exceed the capacity of local landfills. With the incorporation of recommended mitigation measure **MM WASTE-1**, solid waste generated during construction would be recycled to the greatest extent possible. Construction would remain in compliance with federal, state, and local solid waste management and reduction requirements.

Operation

No Impact. No solid waste is expected to be generated during the operation of the PG&E controlled gen-tie transmission lines. Federal, state, or local requirements for solid waste management and reduction would not be applicable.

5.12.2.3 Cumulative Impacts

Past, present, and probable future projects listed in Appendix A-1 (Cumulative Scenario) were gathered from the application materials and from surrounding governmental agency sources including the City of Vacaville and Solano County. CEC staff completed a comprehensive exercise to identify a wide range of projects in the vicinity of the proposed project to fully analyze potential cumulative impacts to solid waste. The following projects were selected from Appendix A-1 based on their availability of solid waste impact data and analysis and shared usage of the Recology Hay Road Landfill.

Vaca Dixon Power Center Project

The Vaca Dixon Power Center Project (VDPCP) is a 57 MWh BESS system on a ten-acre parcel next to Interstate 80, less than 1 mile from the Corby BESS project. According to the project application, the project expects to produce approximately 300 tons of solid waste during the expected 24 months of construction and less than 10 tons per year during operations. Based on these quantities and the capacity of the Recology Hay Road landfill the project is expected to have a less than significant impact from solid waste on local landfill capacity.

The Farm at Alamo Creek and The Fields at Alamo Creek developments

The Farm at Alamo Creek (the Farm) is a planned housing development on 210.5 acres of land with 768 homes, parks and trails, and neighborhood commercial use. A Draft Environmental Impact Report (DEIR) was completed for the project in 2018 (Dudek 2018). The Fields at Alamo Creek (the Fields) adds 33.6 acres to the Farm project plan with an additional 241 homes with additional park and open space. The project completed a Supplemental EIR (SEIR) in 2024, also with the city of Vacaville as lead agency (Dudek 2024). The Farm estimates the solid waste generation for its 2,104 residents at 1,879.8 tons/year (t/y) (5.15 tons/day [t/d]) and the Fields estimates solid waste generation for its 658 residents 684.5 t/y (1.88 t/d) for a combined total of 2564.3 t/y (7.03 t/d). With abundant available capacity at solid waste handling facilities in the area, the quantity of waste generation by those projects was deemed to have a less than significant impact.

Midway Plaza

Midway Plaza is a 17.8 acre development which would include a gas station, convenience store and restaurant. The Initial Study (IS) prepared by Solano County did not quantify solid waste production for the project but, given the nature of project and the amount of solid waste typically generated by the activities involved, the impact was deemed to be less than significant.

Transwestern Ventures Life Science Project

Transwestern Ventures Life Science Project would be a 22.4-acre life science manufacturing facility that includes 3 buildings, a parking lot and landscaping. According to the Modified Initial Study (MIS), the project would produce 6,204 t/y (17 t/d) and would have a less than significant impact.

The four projects above would all primarily utilize the capacity of the Recology Hay Road which has a daily throughput of 2,400 tons. This proposed BESS project would generate approximately 550 tons of solid waste during construction over 15 months and negligible operational solid waste production. Therefore, the proposed project's cumulative impact on local landfill capacity is less than significant.

5.12.3 Project Conformance with Applicable LORS

Table 5.12-1 below details staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the jurisdictional project components would conform with LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the jurisdictional components of the project would conform with all applicable LORS. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COC.

TABLE 5.12-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Resource Conservation and Recovery Act (RCRA)	
40 CFR, Subtitle D. Provides guidelines for the storage and collection of residential, commercial, and institutional solid waste (Part 243), source separation for material recovery (Part 246), and design of municipal solid waste facilities (Part 258).	**Yes.** All landfills proposed for use with the project would comply with Federal regulations.
State	
Integrated Waste Management Act (Assembly Bill 939)	
AB 939/Public Resources Code Section § 40000. Established the California Integrated Waste Management Board (CIWMB), revamped the government codes regulating solid waste management, and required cities and counties to reduce the amount of solid waste disposed of in landfills by 50 percent.	**Yes.** All landfills proposed for use with the project would comply with State statutes.
California Assembly Bill 341 (Reduction of Solid Waste)	
AB 341/Public Resources Code Section 42926(a). Set a statewide goal of reducing solid waste by 75 percent by 2020. It also established mandatory recycling programs for solid waste.	**Yes.** All landfills proposed for use with the project would comply with State statutes. COC **WASTE-1** would assist with the solid waste reduction requirement of the statute.
California Senate Bill 1383 (Reduction of Organic Waste)	
SB 1383/CCR Title 14 Section § 17402. Established statewide targets to reduce 2014 organic waste levels to 50 percent by 2020 and to 75 percent by 2025.	**Yes.** All landfills proposed for use with the project would comply with State regulations.

TABLE 5.12-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Local	
Solano County Ordinance	
23-20 This ordinance states that solid waste must be removed every 7 days. **23-22** This ordinance defines solid waste storage container requirements.	**Yes.** On-site waste management procedures would be defined in the Construction and Operation Waste Management Plans per COC **WASTE-1**.

5.12.4 Conclusions and Recommendations

CEC staff recommends adopting the COCs as detailed in subsection "5.12.5 Proposed Conditions of Certification," below. The COCs are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

As discussed above, with implementation of the proposed COCs, the project would have a less than significant impact related to solid waste management and would conform with applicable LORS.

5.12.5 Proposed Conditions of Certification

The following proposed Conditions of Certification include measures to ensure conformance with applicable LORS.

WASTE-1 The project owner shall prepare a Construction Waste Management Plan and an Operation Waste Management Plan for all wastes generated during construction and operation of the facility, respectively, and shall submit both plans to the Compliance Project Manager (CPM) for review and approval. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Verification: No less than 30 days prior to the start of site mobilization, the project owner shall submit the Construction Waste Management Plan to the CPM for approval.

The Operation Waste Management Plan shall be submitted to the CPM no less than 30 days prior to the start of project operation for approval. The project owner shall submit any required revisions within 20 days of notification by the CPM.

In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to the planned management methods.

5.12.6 Recommended Mitigation Measures

During construction of non-jurisdictional project components, the following mitigation measure is recommended to be adopted by the agency with permitting authority over those components, which can and should adopt them, consistent with California Code of Regulations title 14, section 15091(a)(2): **MM WASTE-1**.

MM WASTE-1 The project owner shall prepare a Construction Waste Management Plan and an Operation Waste Management Plan for all wastes generated during construction and operation of the facility, respectively, and shall submit both plans to the Compliance Project Manager (CPM) for review and approval. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications; and
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans.

Verification: No less than 30 days prior to the start of site mobilization, the project owner shall submit the Construction Waste Management Plan to the CPM for approval.

The Operation Waste Management Plan shall be submitted to the CPM no less than 30 days prior to the start of project operation for approval. The project owner shall submit any required revisions within 20 days of notification by the CPM.

In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to the planned management methods.

5.12.7 References

CalRecycle 2025 – California Department of Resources Recycling and Recovery (CalRecycle). SWIS Facility/Site Search website. Accessed on November 20, 2025. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Search

CIWMB 1991 – California Integrated Waste Management Board (CIWMB). Final Report, Conversion Factors for Individual Material Types. Prepared by CalRecovery

Incorporated. December 1991. Accessed on November 3, 2025. Available online at: https://p2infohouse.org/ref/48/47051.pdf

Dudek 2018 – Dudek. Draft Environmental Impact Report for The Farm at Alamo Creek Specific Plan Project. Prepared for City of Vacaville Planning Division February 2018. Available online at: https://www.cityofvacaville.gov/home/showpublisheddocument/10381/636559259355170000

Dudek 2024 – Dudek. Draft Supplemental Environmental Impact Report for The Farm at Alamo Creek Project. Prepared for the City of Vacaville February 2024. Available online at: https://www.cityofvacaville.gov/home/showpublisheddocument/23131/638435091896270000

SCDHEC 2015 – South Carolina Department of Health and Environmental Control (SCDHEC). Volume-To-Weight Conversion Factors table. Prepared May 5, 2015. Accessed on November 10, 2025. Available online at: https://dc.statelibrary.sc.gov/bitstream/handle/10827/18367/DHEC_Volume_to_Weight_2015-03.pdf?sequence=1&isAllowed=y

Solano County 2008 – Solano County. Solano County General Plan. Adopted August 2008. Accessed March 24, 2025. Accessed online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp

Solano County 2025a – Solano County. Solano County Parcel Viewer. Accessed October 8, 2025. Available online at: https://regis.solanocounty.com/apps

Solano County 2025b – Solano County Department of Resource Management. Midway Plaza Initial Study and Mitigated Negative Declaration. Prepared April 2025. Available online at https://www.solanocounty.gov/government/resource-management/environmental-impact-reports-negative-declarations

Stantec 2022 – Stantec. Transwestern Ventures Life Science Project Modified Initial Study. Prepared for City of Vacaville November 2022. Available online at: https://vcvll.csqrcloud.com/community-etrakit/Search/project.aspx?activityNo=22-381

Tetra Tech 2024 – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3, dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=259874&DocumentContentId=96062

Tetra Tech 2025a – Tetra Tech (TN 262554). Project Description Update, dated April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=262554&DocumentContentId=99092

Tetra Tech 2025b – Tetra Tech (TN262555). Data Request Response #1j, dated April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=262555&DocumentContentI

d=99093

Tetra Tech 2026 – Tetra Tech (TN 268258) Project Description Update #2, Part 1, dated January 16 2026. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=268258&DocumentContentId=105429

USEPA 2016 – United Stated Environmental Protection Agency (USEPA). Volume-To-Weight Conversion Factors, U.S. Environmental Protection Agency, Office of Resource Conservation and Recovery, April 2016. Accessed on November 27, 2023. Available online at: https://www.epa.gov/sites/default/files/2016-04/documents/volume_to_weight_conversion_factors_memorandum_04192016_508fnl.pdf

City of Vacaville 2015 – City of Vacaville General Plan. Accessed October 8, 2025. Available online at: https://www.cityofvacaville.gov/government/community-development/general-plan

5.13 Transmission Line Safety and Nuisance

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to transmission line safety and nuisance. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.13.1 Environmental Setting

Regulatory

The following section outlines the national, federal, state, and local laws and policies that govern the control of field and non-field impacts of electric power lines. CEC staff's analysis examines the project's compliance with these requirements. Different versions of the National Electrical Code (NEC) are enforced throughout the United States because the code does not fall under federal law. Instead, it is a "uniform code," a set of guidelines that each state may adopt and apply as applicable.

Federal

Institute of Electrical and Electronics Engineers (IEEE). IEEE is the world's largest technical professional organization dedicated to advancing technology for the benefit of humanity. IEEE and its members inspire a global community through its highly cited publications, conferences, technology standards, and professional and educational activities.

American National Standards Institute (ANSI). ANSI is a private, non-profit organization that administers and coordinates the U.S. voluntary standards and conformity assessment system.

National Electrical Safety Code (NESC). NESC is a United States standard for the safe installation, operation, and maintenance of electric power and communication utility systems, including power substations, overhead power lines, and underground power and communication lines.

Code of Federal Regulations (CFR)

Title 47, CFR, section 15.205, Federal Communications Commission (FCC). Prohibits the operation of devices that can interfere with radio-frequency communication.

Title 14, CFR Part 77 of the Code of Federal Regulations (CFR), Safe, Efficient Use and Preservation of the Navigable Airspace. It establishes standards and notification requirements for the safe and efficient use of navigable airspace.

FAA Advisory Circular No. 70/7460-1L (2015), "Proposed Construction and/or Alteration of Objects that May Affect the Navigation Space."

FAA Advisory Circular 70/7460-1L, "Obstruction Marking and Lighting"

State

California Public Utilities Commission (CPUC)

General Order 52. Governs the construction and operation of power and communications lines to prevent or mitigate interference.

General Order-131-E, Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California. Specifies application and notice requirements for new line construction, including electric and magnetic field (EMF) reduction.

General Order 95, Rules for Overhead Electric Line Construction. Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.

General Order 128, Rules for underground electric supply and communication systems construction. The order formulates uniform requirements for the construction of underground electric supply and communication lines in California.

California Code of Regulations (CCR)

Title 8, CCR, Section 2700 et seq., High Voltage Safety Orders. Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.

Title 14, CCR, Sections 1250-1258, Fire Prevention Standards for Electric Utilities. Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards, specifying when and where these standards apply.

Cumulative

No power-generating cumulative projects are listed in **Appendix A, Table A-1**, that, when combined with the project, would result in significant environmental impacts due to physical or electrical effects associated with transmission lines. There is a proposed BESS project, Vaca Dixon Power Center, that would be located near this project. However, these two projects would not share common gen-tie lines or substations where the project is interconnected. Furthermore, GO-95 requirements would ensure that cumulatively these two projects would not cause significant transmission line related safety or nuisance impacts.

5.13.2 Environmental Impacts

TRANSMISSION LINE SAFETY AND NUISANCE To what extent does the project's transmission line physically or electrically satisfy the following criteria? (Via its electromagnetic field):	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Affect aviation safety?	☐	☒	☐	☐
b. Interfere with radio frequency communication?	☐	☐	☒	☐
c. Be a source of audible noise?	☐	☐	☒	☐
d. Be a fire hazard?	☐	☒	☐	☐
e. Be a source of hazardous shock?	☐	☒	☐	☐
f. Be a source of nuisance shock?	☐	☒	☐	☐
g. Affect public health?	☐	☒	☐	☐

Environmental checklist established by Cal. Code Regs., tit. 20, Div. 2, Ch. 5, Powerplant and Transmission Line Jurisdictional Investigations, Appendix B, Transmission System Safety and Nuisance

Battery Storage System, Substation, and Interconnection Facilities

Battery Energy Storage System

The project's primary purpose is to develop, construct, and operate a battery storage facility that would help meet the state's renewable portfolio standard (RPS), greenhouse gas (GHG) reduction, and carbon neutrality goals. The proposed project features a 1,200 megawatt-hour (MWh) battery energy storage system (BESS). The BESS would draw electricity from the power grid to charge and store electrical energy, which can be discharged back into the grid when needed. This project offers several benefits, including reducing the reliance on natural gas power plants to balance intermittent renewable energy generation and serving as an additional capacity resource to improve grid reliability.

The BESS would also include a battery management system to control battery charging and discharging. The project has been proposed using a commercially available lithium-iron phosphate battery or similar technology.

The BESS would consist of a Power Conversion System (PCS). A PCS functions to convert between DC and AC and change the voltage level from the Medium Voltage (MV) collection voltage to the voltage output of the BESS enclosures. A PCS is a packaged and integrated system consisting of a bidirectional inverter, MV transformers, protection equipment, circuit breakers, harmonic filter equipment, terminals, and a connection cabling system.

The MV collection system would include multiple components that connect the PCS units to the project substation, including underground conductor circuits, switchboards, switchgear, and 34.5kV voltage transformers. The conductors for the MV collection system would be installed during construction in underground trenches.

Step-up substation

The project substation would include three generator step-up transformers to step up the voltage of electricity from 34.5 kV to 230 kV for transmission to the Vaca-Dixon Substation or step down the voltage for storage in the BESS batteries. The project substation would include an approximately 14-foot by 60-foot control enclosure housing the SCADA system. Auxiliary power required for the control enclosure and SCADA system would be provided by a connection to the local PG&E distribution system. Rating of the transformers and breakers is as follows: two 230/34.5/13.8 kV transformers; one 241.5/34.5/13.8 kV, four 2,000-ampere (A) 230 kV gas circuit breakers; and five 2,000 A, 34.5 kV vacuum circuit breakers, along with buses, switches, surge arresters, and other substation equipment.

Generator tie line

The project would be connected through a 230 kV generation tie line consisting of overhead and underground portions with a combined length of 1.1 miles to PG&E's Vaca-Dixion substation. Overhead transmission line would be a single-circuit, three-phase, 230 kV transmission line of three aluminum core, steel-supported (ACSS), size of 1272-kcmil. The applicant would construct approximately 0.9 miles, and PG&E would construct approximately 0.2 miles of the gen-tie line. Overhead transmission lines would use towers ranging from 90 to 130 feet in height. The project proposes two underground route options:

- The route # 1 would be installed in concrete duct banks 2 feet wide and 3 feet deep, crossing under Kilkenny Road, PG&E gas pipelines, and other underground constraints using trenchless crossings.
- The route # 2 would be installed via horizontal directional drill within the City of Vacaville, maintained on Kilkenny Road in a duct bank, or directly buried like the route # 1 option. The horizontal directional drilling is planned for a minimum depth of 20 feet below ground. The gen-tie line underground cable type would be a single 5,000 kcmil coated copper cross-linked polyethylene (XLPE) cable. The cable has a rated 1,952 amperes (A) based on a 69 percent daily load factor.

PG&E would construct, own and operate the transmission line once it crosses the point of change of ownership (POCO) at Structure 6; then the transmission line would cross over freeway 80 and connect to the 230 kV bus at PG&E's Vaca-Dixion substation. To accommodate this and other projects in the future, PG&E is performing upgrades within its substation, including a new 230 kV double bus bay structure to interconnect this project to PG&E's substation. A redundant fiber optic cable pathway would also be installed parallel to but separate from the gen-tie line in the same construction footprint and within the same acquired easements, City of Vacaville right-of-way. PG&E transmission facilities, including PG&E's gen-tie line segment from the POCO/POI to the fence line at the Vaca-Dixon substation, would be constructed by PG&E consistent with its construction standards such as GO-95, GO-128, and GO-131-E adopted from the CPUC.

5.13.2.1 Methodology and Thresholds of Significance

The LORS and practices listed in **Table 5.13.1** have been established to maintain impacts below potential environmental significance. Thus, if CEC staff determines that the project would comply with the applicable LORS, CEC staff concludes that any transmission line-related safety and nuisance impacts would be less than significant. The nature of these individual impacts is discussed below, together with the potential for compliance with the applicable LORS.

5.13.2.2 Direct and Indirect Impacts

a. Would the project's transmission line physically or electrically (via its electromagnetic field) affect aviation safety?

Construction and Operation

Less Than Significant Impact. Based on the analysis below, the project's transmission lines' construction-related physical and electrical impacts on aviation safety would result in a less-than-significant impact by implementing CPUC standards.

Federal Aviation Administration (FAA) notification is required for structures over 200 feet above ground level or if the structure is less than 200 feet in height but located within the restricted airspace in the approaches to public or military airports and heliports. Moreover, for airports with runways longer than 3,200 feet, the FAA defines the confined space as an area extending 20,000 feet (3.3 nautical miles) from the runway. For airports with runways of 3,200 feet or less, the restricted airspace is defined as a space that extends 10,000 feet from the runway. For heliports, the restricted space is an area of space that extends 5,000 feet (0.8 nautical miles) from the landing site.

The CEC staff has assessed the potential for an aviation hazard related to the height of the proposed project's transmission lines. The project overhead generator structures and radio tower of the substation would not reach a maximum height of 200 feet, equivalent to the 200-foot height of concern to the FAA. Therefore, gen-tie and radio tower structures would not require flashing red lights installed to enhance aviation visibility and comply with FAA standards and Advisory Circular 70/7460-1L (FAA, 2016). COC **TLSN-5** requires the applicant to construct transmission facilities per CPUC and PG&E construction standards, such as G.O. 95, 128, and 131-E. Additionally, the applicant must obtain approval from the FAA if the transmission structures exceed a height of 200 feet. This would include preparing a lighting plan for the project and obtaining FAA approval, which would specify the installation of flashing red lights on designated generator-tie line structures to improve visibility for aviation. The nearest municipal airport (Nut Tree Airport) is 2.9 miles from the project's site and the Travis Airforce Base in Fairfield, California is about 8.5 miles from the project's site. Therefore, CEC staff concludes that with COC **TLSN-5**, the transmission lines would not pose a collision risk to aviation or aircraft.

b. Would the project's physical or electrical transmission line (via its electromagnetic field) interfere with radio-frequency communication?

Construction and Operation

No Impact. Based on the analysis below, the impact on radiofrequency would be less than significant as the transmission lines are not proposed immediately above inhabited areas.

Transmission line-related radio-frequency interference is one of the indirect effects of line operation. It is produced by the physical interactions of line electric fields. More specifically, such interference is caused by radio noise generated by the interaction of electric fields with the surface of the energized conductor. The process involved is known as *corona discharge;* it is referred to as *spark gap electric discharge* when it occurs within gaps between the conductor and insulators or metal fittings. Corona from a transmission line may result in radio and television reception interference, audible noise, light, and ozone production. When generated, such noise manifests as perceivable interference with radio or television signal reception or other radio communication.

Since the level of interference depends on factors such as line voltage, distance from the line to the receiving device, antenna orientation, signal level, line configuration, and weather conditions, maximum interference levels are not specified as design criteria for modern transmission lines. The level of any such interference usually depends on the magnitude of the electric fields involved and the distance from the line. Therefore, the potential for such impacts would be minimized by reducing the line's electric fields and by locating the line not above inhabited areas.

The project transmission lines would be built and maintained according to standard practices that minimize surface irregularities and discontinuities. Due to the unbuilt bare land around the transmission interconnection, the project transmission line would unlikely affect radio or television reception. CEC staff does not expect any corona-related radio-frequency interference or complaints and does not recommend any related conditions of certification.

c. Would the project's transmission line physically or electrically (via its electromagnetic field) be a source of audible noise?

Construction and Operation

Less Than Significant Impact. Based on the analysis below, the physical or electronic effects of operating the project's transmission lines would not significantly increase current background noise levels. Therefore, the impact of audible noise from the project's transmission lines would be less than significant.

Audible noise usually results from the action of the electric field at the surface of the line conductor. It could be perceived as a crackling, frying, or hissing sound or hum, especially in wet weather. Since the noise level depends on the strength of the line's electric field, the potential for perception would be assessed by estimating the field strengths during operation. The electric field increases when the line voltage increases. Research by the Electric Power Research Institute (EPRI 1982) has validated this by showing that the fair-weather audible noise from modern transmission lines is generally indistinguishable from background noise at the edge of a right-of-way of 100 feet or more. A more detailed discussion of the proximity of potentially sensitive receptors is found in **Section 5.9, Noise and Vibration**. The proposed line right-of-way would fall mainly within the project boundary and PG&E service area. Therefore, staff do not expect the proposed line operation to add to the project area's current background noise levels. Also, the audible noise level depends on the online voltage, not the conductor's power flow level. Because line voltage remains nearly constant for a transmission line during regular operation, the audible noise associated with the 230 kV lines in the area would be of the same magnitude before and after the project.

Federal or state regulations do not specifically mandate noise-reducing designs related to electric field intensity in terms of specific noise limits. Instead, such audible noise is limited through design, construction, or maintenance practices established from industry research and experience as effective without impacts on online safety, efficiency, maintainability, and reliability. Since these designs are also aimed at minimizing field strengths, staff do not expect the proposed line operation to add significantly to current background noise levels in the project area. Please refer to the staff's analysis in **Section 5.9, Noise and Vibration**, to assess the proposed project's noise.

d. Would the project's transmission line, either physically or electrically (via its electromagnetic field), be a fire hazard?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, operating the project's transmission line would not be a fire hazard with the incorporation of **TLSN-1** and **TLSN-2**. Therefore, impacts would be less than significant with mitigation incorporated.

The fire hazards addressed in **Table 5.13-1** are those caused by sparks from overhead line conductors or that could result from direct contact between a line and nearby trees and other combustible objects.

The applicant would comply with California Code of Regulations, Title 14, Article 4 (Section 1250 et seq.), establishing fire prevention standards for electric power generation facilities. Also, CPUC GO-95 establishes rules and guidelines for transmission line construction, including clearances from other manmade and natural structures and tree-trimming requirements to mitigate fire hazards. Therefore, the applicant's intention

to ensure compliance with the clearance-related aspects of GO-95 would be an essential part of this mitigation approach. CEC staff concludes that COCs **TLSN-1** and **TLSN-2** should be implemented as mitigation measures.

e. Would the project's transmission line, either physically or electrically (via its electromagnetic field), be a source of hazardous shock?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the project's transmission line operation would not be a source of hazardous shock, with the incorporation of COCs.

Hazardous shocks could result from direct or indirect contact between an individual and the energized line, whether overhead or underground. Such shocks can cause severe physiological harm or death. Hazardous shocks remain a driving force in the design and operation of transmission and other high-voltage lines.

No design-specific federal regulations have been established to prevent hazardous shocks from overhead power lines. Safety is assured within the industry through compliance with the requirements specifying the minimum national safe operating clearances applicable in areas where the line might be accessible to the public.

Potentially hazardous shocks could result from electrical faults in the new project equipment or the PG&E high-voltage transmission system. The existing PG&E 230-kV transmission system is located within a secure area under PG&E's access control. The new project switchyard would be fenced to keep individuals from entering the area where they could be exposed to associated hazardous shocks. The new project's 230 kV gen-tie lines would be designed according to the applicable LORS. Implementing the GO-95-related measures against direct contact with the energized line would minimize the risk of hazardous shocks. During construction and operation hazardous shocks are highly unlikely to occur because the lines would be constructed in conformance with the requirements of CPUC GO-95 and California Code of Regulations (CCR), Title 8, section 2700 et seq. CEC staff's proposed COCs, **TLSN-1** and **TLSN-3**, would adequately implement the necessary mitigation measures.

f. Would the project's transmission line, either physically or electrically (via its electromagnetic field), be a source of nuisance shock?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, the operation of the project's transmission line would not be a source of nuisance shock, with the incorporation of COCs

Nuisance shocks are caused by current flow at levels generally incapable of causing physiological harm. They result primarily from direct contact with metal objects electrically charged by fields from the energized line. The line's electric and magnetic fields induce such electric charges in different ways.

No design-specific federal or state regulations limit nuisance shocks in the transmission line environment. For modern overhead high-voltage lines, such shocks are effectively minimized through grounding procedures specified in the National Electrical Safety Code (NESC) and the joint guidelines of the American National Standards Institute (ANSI) and the Institute of Electrical and Electronics Engineers (IEEE). Standard industry grounding practices would minimize the potential for nuisance shocks around the proposed line.

For the proposed transmission line, the project owner would be responsible in all cases for ensuring compliance with these grounding-related practices within the right-of-way. CEC staff proposes COC **TLSN-3** to provide grounding for the project.

g. Would the project's transmission line either physically or electrically (via its electromagnetic field) affect public health?

Construction and Operation

Less Than Significant with Mitigation Incorporated. Based on the analysis below, operating the project's transmission line would not significantly impact public health.

Electric and magnetic fields are created whenever electricity flows; exposure to them is generally called EMF exposure. There is public concern regarding the possibility of health effects from EMF exposure. The electrical transmission interconnection and other electrical devices constructed as part of the project emit EMF when in operation. These fields are typically measured near ground level, where people encounter them. To the extent they occur, EMF fields could impact receptors on the properties adjacent to the project site.

As previously stated, the project's electrical transmission interconnection and other electrical devices would be located mainly within the project site and PG&E's transmission system. There are no receptors adjacent to the locations of project components that are known to result in EMF. Site access is restricted to station workers, incidental construction and maintenance personnel, other company personnel, regulatory inspectors, and approved guests. Because access would not be available to the public, public exposure to EMF is not expected from the project or the transmission facilities to be constructed as part of the project.

Industries and Applicant's Approach to Reducing EMF Exposures

The present focus of EMF exposure concerns the magnetic field. Unlike electric fields, magnetic fields penetrate the soil, buildings, and other materials, producing human exposure that causes health concerns. The industry seeks to reduce exposure not by

setting specific exposure limits but through design guidelines that minimize exposure in each case.

In comparison to the strong magnetic fields from the more visible high-voltage power lines, CEC staff consider it essential, for perspective, to note that an individual in a home could be exposed to much stronger fields from high-voltage lines while using some common household appliances (National Institute of Environmental Health Sciences 1998). The difference between these field exposures is that the higher-level, appliance-related exposures have a short-term duration. In contrast, the exposures from power lines have a lower level but a long-term duration. Scientists have not established which exposure types would be more biologically meaningful to the individual. CEC staff notes such exposure differences only to show that high-level magnetic field exposures regularly occur in areas other than around high-voltage power lines.

As with project lines, specific field strength-reducing measures would be incorporated into the proposed line design to ensure the field strength minimization currently required by the CPUC, given the concern over EMF exposure and health.

The field reduction measures that could be applied include the following:

1. Increasing the distance between the conductors and the ground to an optimal level.
2. Reducing the spacing between the conductors to an optimal level;
3. Minimizing the current in the line; and
4. Arrange the current flow to maximize the cancellation effects from the interaction of conductor fields.

Long-term residential field exposures would not be a significant concern since the route of the proposed project's transmission line would not be above residences. The field strengths of most significance would be encountered within the boundaries of the proposed project and a PG&E-controlled area. These field intensities would depend on the effectiveness of the applied field-reducing measures. The requirements in COC **TLSN-4** for field strength measurements are intended to assess the applicant's assumed field reduction efficiency. The actual contribution to the area's field exposure levels would be documented for the proposed route from the results of the field strength measurements required in **TLSN-4**, as field strength measurements are intended to assess the applicant's assumed field reduction efficiency.

5.13.2.3 Cumulative Impacts

Construction and Operation

No impact. The cumulative impacts of Transmission Line Safety and Nuisance would be considered if other power-generating facilities were adjacent to the project. There is a proposed BESS project, Vaca Dixon Power Center, that would be located near this project. However, GO-95 requirements would ensure that cumulatively these two

projects would not cause significant transmission line related safety or nuisance impacts. Thus, there would be no adverse cumulative impact due to the project combined with other projects.

5.13.3 Project Conformance with Applicable LORS

Table 5.13-1 below details the staff's determination of conformance with applicable local, state, and federal LORS, including any proposed COCs, where applicable, to ensure the jurisdictional project components would conform with LORS. As shown in this table, the CEC staff concludes that with the implementation of specific COCs, the proposed project would conform to all applicable LORS. The subsection below, 5.13.5 Proposed Conditions of Certification, contains the full text of the referenced COCs.

TABLE 5.13-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
State	
California Public Utilities Commission (CPUC) General Order 52 (GO-52). Governs the construction and operation of power and communications lines to prevent or mitigate interference.	**Yes.** The applicant would not construct or operate transmission or communication lines to prevent or mitigate inductive interference. Applicable COC **TLSN-1, TLSN-2** and **TLSN-3**.
California Public Utilities Commission (CPUC) General Order (GO-95 and GO-128), "Rules for Overhead and Underground Electric Line Construction". Governs clearance requirements to prevent hazardous shocks, grounding techniques to minimize nuisance shocks, and maintenance and inspection requirements.	**Yes.** To satisfy the GO-95 requirement, the applicant would construct Gen-tie line structures with a height of less than 120 feet. All gen-tie structures, substation components, and the switchyard would be constructed according to the GO 95 and 128 electrical grounding standards. The project's underground circuits would utilize the duct banks to minimize the EMF effects, thus satisfying the GO-128 standards. The applicant would utilize the lighting and surge arresters in the substations and switchyard as necessary, dissipating the fault currents and voltages caused by lightning and voltage surges. Applicable COC **TLSN-1, TLSN-3** and **TLSN-5**.
California Code of Regulations (CCR), Title 8, section 2700 et seq. "High Voltage Safety Orders". Specifies requirements and minimum standards for safely installing, operating, working around, and maintaining electrical installations and equipment.	**Yes.** Gen-tie structures, circuits overhead/underground, substations, and switchyard components would be constructed according to "High Voltage Safety Orders." Applicable COC **TLSN-1, TLSN-3** and **TLSN-4**.
The National Electrical Safety Code (NESC) specifies grounding procedures to limit nuisance shocks and minimum conductor ground clearances.	**Yes.** All Gen-tie structures, substation components, and the switchyard would be constructed according to the NESC standards and GO 95 and 128 grounding standards.

TABLE 5.13-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	Overhead and underground grounding circuits would be designed with proper conductor sizes to dissipate the fault current. The applicant would select proper conductor sizes to satisfy the NESC standards. All the substation or switchyard components would be grounded using the underground grounding grid. The applicant would assess the soil resistivity test for the project's substation, switchyard sites, and transmission line path. Applicable COC **TLSN-1** and **TLSN-4**.
GO-131-D, CPUC" Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California." Specifies application and notice requirements for new line construction, including EMF reduction.	**Yes.** The project would be built with proper transmission line clearance with the ground and satisfy the GO-95 Transmission paths Right-of-way requirements. Underground circuits would utilize duct banks to minimize the EMF and the de-rated ampacity of conductors. Applicable COC **TLSN-1, TLSN-3** and **TLSN-4**.
CPUC Decision D.93-11-013. Specifies CPUC requirements for reducing electric and magnetic fields.	**Yes.** The CPUC required the utilities to undertake no-cost EMF mitigation measures and implement low-cost mitigation measures to the extent approved as part of a project's certification process. "Low-cost" was defined as being within 4 percent of the total project cost, but the Commission specified that this 4 percent benchmark is not an absolute cap. Applicable COC **TLSN-4**.
CPUC Decision D.06-01-042. Re-affirms CPUC EMF Policy in D.93-11-013.	**Yes.** Re-affirms the above requirement. Applicable COC **TLSN-4**.
California Code of Regulations, Title 14sections 1250-1258, "Fire Prevention Standards for Electric Utilities." Provides specific exemptions from electric pole and tower firebreak and conductor clearance standards and specifies when and where standards apply.	**Yes.** The applicant should refer to the Fire Prevention Standards under 1250-1258. (design, construction, and operation phases). Applicable COC **TLSN-1, TLSN-2** and **TLSN-3**.
Standards	
Institute of Electrical and Electronics Engineers (IEEE) 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations". Specifies the guidelines for grounding-related practices within the ROW and substations.	**Yes.** A fence around the substation or switchyard and proper Transmission line clearance would facilitate a safety clearance zone.

TABLE 5.13-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	All the substations, switchyard, and fence components would be grounded using the underground grounding grid. Maintain the proper ROW of the transmission paths and substations to minimize the flashover and EMF effects. Applicable COC **TLSN-1** and **TLSN-3**.
American National Standards Institute (ANSI/IEEE) 644-1944 Standard Procedures for Measuring Power Frequency Electric and Magnetic Fields from AC Power Lines. Specifies standard procedures for measuring electric power frequency and magnetic fields from an operating electric line.	**Yes.** The applicant would conduct the following tests. The first test is a Corona performance test. It uses visible techniques to determine the onset of a positive corona. The second test is radio interference voltage (RIV). To minimize the flashover and EMF effects, the RIV voltage must be measured according to ANSI C63.2 or CISPR 16-1-1 and CISPR TR 18-2. Applicable COC **TLSN-4**.

5.13.4 Conclusions and Recommendations

As discussed above, with the implementation of COCs, the project would have a less than significant impact related to transmission line safety and nuisance and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection "5.13.5 Proposed Conditions of Certification" below. The COCs below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

5.13.5 Proposed Conditions of Certification

TLSN-1 The project owner shall construct the proposed 230-kV transmission lines according to the requirements of California PUC's GO- 95, GO-52, GO-131-E, California Code of Regulations, Title 8, sections 2700 through 2974, and Group 2, High Voltage Electrical Safety Orders, and PG&E's EMF reduction guidelines**.**

Verification: At least 30 days before starting construction of the transmission lines or related structures and facilities, the project owner shall submit to the compliance project manager (CPM) a letter signed by a California-registered electrical engineer affirming that the lines will be constructed according to the requirements stated in the condition.

TLSN-2 The project owner shall ensure that the route of the proposed transmission lines is kept free of combustible material, as required under the provisions of GO-95 and of the California Code of Regulations, Title 14, sections 1250-1258.

Verification: During the first five years of plant operation, the project owner shall provide a summary of inspection results and any fire prevention activities carried out along the proposed route, and provide such summaries in the Annual Compliance Report on transmission line safety and nuisance-related requirements.

TLSN-3 The project owner shall ensure that all permanent metallic objects within the proposed route are grounded according to industry standards.

Verification: At least 30 days before the lines are energized, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

TLSN-4 The project owner shall measure the line EMFs' maximum strengths at the ROW's edge to validate the applicant's estimates for these fields. These measurements shall be made: (a) according to the standard procedures of the American National Standards Institute/Institute of Electrical and Electronics Engineers (ANSI/IEEE); and (b) before and after energizing. The measures shall be completed no later than six months after the start of operations.

Verification: The project owner shall file copies of the pre- and post-energizing measurements with the CPM within 60 days after the measurements are completed.

TLSN-5 Gen-Tie line and other transmission-related structures: Transmission facilities are constructed to satisfy CPUC and PG&E construction standards, such as GO-95, GO-128, and GO-131-E.

Verification: At least 30 days before the construction of structures above 200 feet tall, the project owner shall transmit to the CPM a letter confirming compliance with this condition.

5.13.6 Recommended Mitigation Measures

There are no recommended mitigation measures for transmission line safety and nuisance.

5.13.7 References

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025a – Tetra Tech (TN 262554). Project Description Update. Docketed April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025b – Tetra Tech (TN 262555). Data Request Response #1. Docketed April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025f – Tetra Tech (TN 263283). Project Description Update Addendum. Docketed May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

PUC 2020 – California Public Utilities Commission. General Order 95 (GO-95), Rules for Overhead Electric Line Construction, revised January 15, 2020, ongoing. https://files.cpuc.ca.gov/gopher-data/go/GO-95.pdf

CPUC 2006 – California Public Utilities Commission. General Order 128 (GO-128), Rules for Construction of Underground Electric Supply and Communications Systems, revised January 2006, ongoing. https://docs.cpuc.ca.gov/published/GENERAL_ORDER/52591.htm

EPRI 1982 – Electric Power Research Institute 1982. Transmission Line Reference Book: 345 kV and above. Accessed online at: https://www.academia.edu/41079824/EPRI_Transmission_Line_Reference_Book_345_kV_and_above

NERC 2024 – North American Electric Reliability Council. 2024 Reliability Standards for the Bulk Electric Systems of North America, Updated January 1, 2024, and ongoing.

NIEHS 1998 – National Institute of Environmental Health Sciences (NIEHS). 1998. An Assessment of the Health Effects from Exposure to Power-Line Frequency Electric and Magnetic Fields, Working Group Report. Accessed online at: http://www.niehs.nih.gov/health/assets/docs_a_e/emf1.pdf

NIEHS 2002 – National Institute of Environmental Health Sciences (NIEHS). 2002. Electric and Magnetic Fields Associated with the Use of Electric Power. https://www.niehs.nih.gov/sites/default/files/health/materials/electric_and_magnetic_fields_associated_with_the_use_of_electric_power_questions_and_answers_english_508.pdf

WECC 2014 – Western Electricity Coordinating Council. WECC Regional Reliability Standards, updated on December 10, 2014, are ongoing.

WHO 2002 – World Health Organization (WHO). 2002, Establishing a Dialogue on Risks from Electromagnetic Fields. Accessed online at: Radiation: Electromagnetic fields

WHO 2024 – World Health Organization (WHO). 2024 Electromagnetic fields (EMF). Accessed online at: https://www.who.int/news-room/questions-and-answers/item/radiation-electromagnetic-fields

5.14 Transportation

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to transportation. See **Section 3.0, Project Description**, of this Staff Assessment for a complete description California Energy Commission's (CEC's) Opt-In certification jurisdictional and non-jurisdictional project components.

5.14.1 Environmental Setting

This subsection describes the environmental and regulatory setting and discusses the construction and operation of the project with respect to transportation.

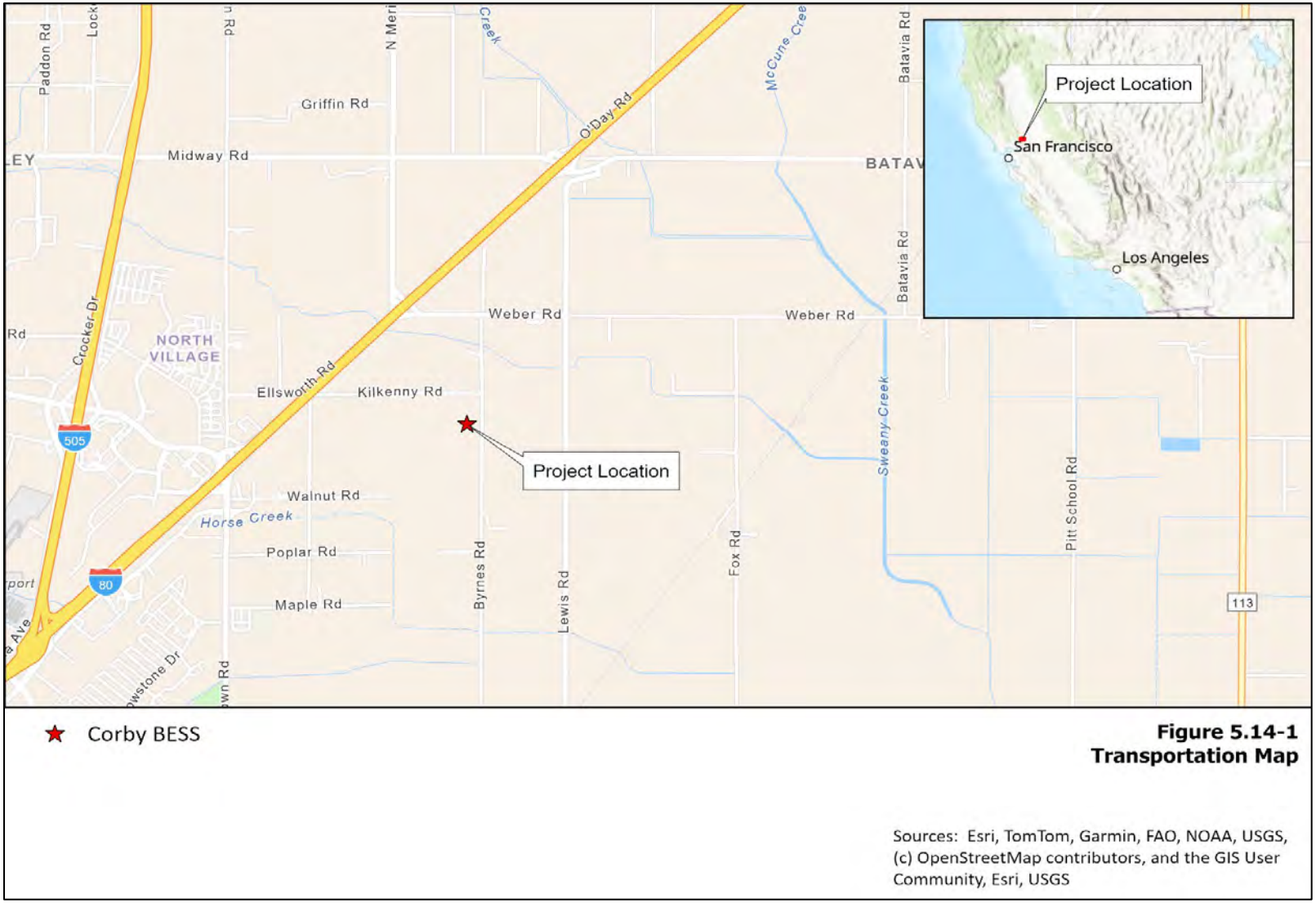
Existing Conditions

Access to the project site is proposed via three new 24-foot-wide access roads from Byrnes Road adjacent to the eastern project site boundary. This includes one road for the project substation and two roads for the BESS yard. Internal site maintenance roads would also be installed to allow access throughout the project site during operations and maintenance. Maintenance roads would be placed between groups of BESS enclosures at sufficient frequencies to allow for routine maintenance and emergency access (TT 2026g).

Regional access would be provided by highways that provide access to these local roads, including I-80, which is approximately 0.75 miles to the northwest of the project site, and State Route (SR) 113, which is approximately 4.5 miles to the east of the project site. I-80 provides access to the site via Byrnes Road and Weber Road.

Descriptions of the roadways and highways likely to be utilized by vehicles travelling to and from the project site are provided within the following sections. For a map of the project site in relation to these roadways, see **Figure 5.14-1, Transportation Map**.

Figure 5.14-1 Transportation Map



Local Setting

Local Roadways

Roads in this area are primarily narrow and one lane per direction. In the project area traffic is light, with almost exclusively agricultural land uses. Traffic congestion is not a concern in the study area, however, speed differentials, due to larger trucks that ship agricultural products and slow farm equipment, can present safety concerns.

The primary local roads to access the project site from I-80 would be Byrnes Road, Kilkenny Road, and Weber Road, all of which are designated as two-lane collectors in the City of Vacaville General Plan and the Solano County General Plan. These local roadways are displayed in **Figure 5.14-1**.

Byrnes Road. This north/south local road begins on the south side of I-80 before turning into California Pacific Road in Elmira. In the study area, it consists of one 10-foot lane per direction, with no shoulders, and runs along the east side of the project site. The Vacaville General Plan identifies Byrnes Road as a local roadway. Three project site access driveways are planned on Byrnes Road south of the intersection of Byrnes Road and Kilkenny Road, two to the BESS yard and one to the substation.

Kilkenny Road. This east/west local road starts at Byrnes Road and heads west along the north side of the project site, before turning south and becoming Willow Road, just before I-80. In the study area, it consists of one 8-foot lane per direction with no shoulders. One project site access driveway is planned on Kilkenny Road approximately 0.6 miles west of Byrnes Road.

Weber Road. This east/west local roadway begins at an interchange with I-80 and heads east before ending at Pitt School Road. In the study area, it consists of one 11.5-foot lane per direction, with no shoulders. Weber Road provides regional access through the interchange with I-80. The Vacaville General Plan identifies Weber Road as a local roadway.

Existing Traffic Volumes

Existing average daily traffic (ADT) volumes, collected in July 2024, are provided in **Table 5.14-1**. The ADT along Byrnes Road near the project site was observed to be 570 vehicles.

TABLE 5.14-1 EXISTING DAILY TRAFFIC VOLUMES

No.	Segment	Average Daily Traffic (ADT)			Heavy Vehicle %		
		NB/EB	SB/WB	Combined	NB/EB	SB/WB	Combined
1	Weber Road - West of Byrnes Road	1303	1172	2475	19%	17%	18%
2	Byrnes Road - South of Kilkenny Road	570	490	1060	6%	10%	8%

Note: Daily traffic volumes collected on Tuesday July 30, 2024.
From Table 4.17-3 in the Corby BESS Application (TT 2024c)

As shown in **Table 5.14-2**, the existing conditions roadway segment capacity analysis indicates that all the study area roadways segments currently operate well below capacity at LOS A.

TABLE 5.14-2 ROADWAY SEGMENT LEVEL OF SERVICE—EXISTING CONDITIONS

No.	Segment	AM Peak Hour				PM Peak Hour			
		Direction 1 (NB/EB)		Direction 2 (SB/WB)		Direction 1 (NB/EB)		Direction 2 (SB/WB)	
		VEH DEN	LOS	VEH DEN	LOS	VEH DEN	LOS	VEH DEN	LOS
1	Weber Road-West of Byrnes Road	0.6	A	0.5	A	0.7	A	0.7	A
2	Byrnes Road - South of Kilkenny Road	0.1	A	0.2	A	0.3	A	0.1	A

Note: Using TRB (2022)
Methodology VEH DEN – Vehicle density
From Table 4.17-4 in the Corby BESS Application (TT 2024c)

Regional Setting

Major Highways

The project site is near three major highways Interstate 80 (I-80), State Route 113 (SR 113) and Interstate 505 (I-505) that would provide primary regional access during both the construction and operational phases.

Interstate 80. I-80 is the main east/west Interstate Highway through California, running from San Francisco, through Sacramento and to the east coast of the US. I-80 is a main route for goods transportation and would be used extensively by heavy trucks during the construction phase for this project. I-80 is a six-lane divided freeway with grade-separated interchanges at Weber Road and Midway Road (approximately one mile from the project site). I-80, near Midway Road, handles approximately 159,000 vehicles daily per direction, including 11,000 per direction during the peak hour (Caltrans 2025a).

State Route 113. SR 113 is designated as an arterial and runs north/south between State Roure 12 (SR 12) and I-80. SR 113, near the project site, consists of one lane per direction. SR 113, in this area, handles approximately 7,400 vehicles daily per direction, including 810 vehicles per direction during the peak hour (Caltrans 2025a).

Interstate 505. I-505 is a short north/south Interstate Highway that connects I-80 and Interstate 5 (I-5) while bypassing the Sacramento area. I-505 is a four-lane divided freeway with a grade-separated interchange at Midway Road near the project site. I-505, near Midway Road, handles approximately 28,500 vehicles daily per direction, including 3,000 vehicles per direction during the peak hour (Caltrans 2025a).

Existing Pedestrian, Bicycle, and Transit Facilities

There are no existing or planned bikeways in the vicinity of the project site. There are no sidewalks or bicycle facilities that exist on roadways accessing the project site or at intersections within the immediate study area. There are also no existing or planned regional trails in the vicinity of the project site (Solano County 2020a) (Solano County 2020b). The project site is not currently served by local public transit service nor is any such service anticipated to be established in the area in the foreseeable future (SC 2020a).

Solano Transportation Authority. Solano Express is managed by the Solano Transportation Authority and provides express intercity bus service throughout Solano County. Routes are operated by the Solano County Transit (SolTrans). SolTrans operates the regional Solano Express Blue Route. The closest route passes approximately 2.2 miles from the project site.

Union Pacific Railroad. The project site is approximately 1.3 miles west of the Union Pacific Railroad mainline tracks.

Airports

Public and private airports located within a 20-mile radius of the project site include Nut Tree Airport and Travis Air Force Base (AFB). The nearest major airport is Nut Tree Airport, located approximately 2.6 miles to the southwest. The project is not located within the airport influence area. The project site is located approximately 7.2 miles north of Travis AFB and is within the airport Compatibility Zone D influence area as identified in the Travis AFB Land Use Compatibility Plan which has been adopted by the Solano County Airport Land Use Commission (LUCP 2024). The zones regulate land use that could interfere with flights. In Zone D, the only prohibited uses include high obstructions, visual distractions, and electronic forms of interference that could affect the safety of aircraft operations. Airport Land Use Commission review is required for anything in Zone D if it is greater than 200 feet above ground level. The project would not include any structures taller than 200 feet and therefore does not require ALUC review.

Potential Federal Aviation Administration (FAA) notification requirements for elevated project structures under Title 14 of the Federal Code of Regulations, Part 77 (FAA 2026) were evaluated using FAA's online Notice Criteria Tool. Because the gen-tie design is not final, the Notice Criteria Tool was used to determine maximum heights that would not require notice rather than evaluating specific structure heights. FAA review is not required at Structures 1 through 6 for heights up to 150 feet, Structure 7 up to 125 feet, Structure 8 up to 120 feet, and Structures 9 through 10 up to 130 feet (see Appendix 3-B of the Corby BESS Application). The proposed structures are anticipated to be shorter than those heights, to be confirmed during final design. Additionally, the project structures would be shorter than other transmission structures that currently exist in the immediate vicinity. Therefore, the FAA air navigation hazard review is not

likely to find that the project could cause a hazard to air navigation, and no further FAA notification is anticipated to be required (TT 2024c).

Regulatory

This subsection summarizes the laws, ordinances, regulations, and standards (LORS) related to transportation analysis of the project.

Federal

Code of Federal Regulations. The Code of Federal Regulations, Title 49, contains the federal rules and regulations pertaining to the transportation of goods and materials.

49 CFR Part 172. This regulation primarily deals with the labeling, marking, and placarding of hazardous materials for transportation. It establishes standards for how hazardous materials must be labeled and marked on packages, containers, and vehicles to effectively communicate their contents and associated risks.

49 CFR Part 173. This regulation focuses on the general requirements for the shipping of hazardous materials. It includes regulations for packaging, including specifications for various types of containers, as well as rules for classifying, describing, and documenting hazardous materials. Section 173 also covers the conditions and exceptions under which certain hazardous materials can be transported and provides guidelines for emergency response information and training.

49 CFR Part 179. Part 179 pertains to the transportation of hazardous materials in the United States. This section outlines design, construction, and testing standards for portable tanks, as well as operational and maintenance procedures to ensure the safe transport of hazardous materials.

49 CFR Part 397.9 (Hazardous Materials Transportation Act of 1974). The Hazardous Materials Transportation Act of 1974 regulates the transportation of hazardous materials in commerce. This act establishes a framework for the safe and secure handling, labeling, packaging, and transportation of hazardous materials. It empowers the United States Department of Transportation to develop and enforce regulations to minimize the risks associated with transporting hazardous materials on highways, railways, waterways, and in the air. The act also sets penalties for violations and provides funding for research, training, and emergency response planning related to hazardous materials transportation.

49 CFR Parts 350-399 (Federal Motor Carrier Safety Regulations). The Federal Motor Carrier Safety Regulations oversee and regulate commercial motor carriers, drivers, and the safe operation of commercial motor vehicles. Parts 350-399 address various aspects of motor carrier safety, including driver qualifications, hours of service, vehicle inspections and maintenance, and commercial driver's license requirements. Additionally, these parts also regulate hazardous materials transportation, including the

classification, packaging, and labeling of hazardous materials, as well as safety standards for transporting these materials.

14 CFR Part 77.9 [b][1]. This regulation requires Federal Aviation Administration (FAA) notification for construction or alterations within 20,000 feet of an airport with a runway more than 3,200 feet in length if the height of the construction or alteration exceeds a slope of 100 to 1 extending outward and upward from the nearest point of the nearest runway of the airport (CFR 2020a). If a project's height, including any temporary equipment (such as cranes used during construction) or any ancillary structures (such as transmission poles), exceeds the 100 to 1 surface, the project applicant must submit a copy of FAA Form 7460-1, Notice of Proposed Construction or Alteration, to the FAA. In addition, within five days after construction reaches its greatest height, the project applicant must submit a copy of FAA Form 7460-2, Notice of Actual Construction or Alteration, to the FAA.

State

California Environmental Quality Act. CEQA Guidelines Section 15064.3, subdivision (b) describes specific considerations for evaluating a project's transportation impacts. Generally, vehicle miles traveled (VMT) is the most appropriate measure of transportation impacts. VMT refers to the amount and distance of automobile travel attributable to a project. Other relevant considerations may include the effects of the project on transit and non-motorized travel.

California Vehicle Code (CVC). The California Vehicle Code consists of a comprehensive set of laws and regulations that govern the operation and use of vehicles on the roadways within the state of California. Specifically, the California Vehicle Code addresses traffic regulations, driver's licensing, vehicle registration, vehicle equipment, safety regulations, parking and towing, commercial vehicle standards, environmental regulations, and penalties and enforcement.

California Streets and Highways Code. The California Streets and Highways Code specifically pertains to the planning, construction, maintenance, and regulation of streets and highways within the state of California. Specifically, the California Streets and Highways Code includes highway designation, highway construction, highway maintenance, eminent domain, public transportation, bicycle and pedestrian infrastructure, emergency services, and traffic control.

California Senate Bill 743. Codified in Public Resources Code Section 21099, SB 743 required changes to the CEQA Guidelines (California 2025a) regarding the analysis of transportation impacts. Pursuant to Public Resources Code Section 21099(b)(1), the criteria for determining the significance of transportation impacts must "promote the reduction of GHG emissions, the development of multimodal transportation networks, and a diversity of land uses." (See adopted CEQA Guidelines Section 15064.3(b), Criteria for Analyzing Transportation Impacts). To that end, in developing the criteria, the Governor's Office of Land Use and Climate Innovation (LCI) proposed, and the

California Natural Resources Agency certified and adopted, changes to the CEQA Guidelines that identify vehicle miles traveled (VMT) as the most appropriate metric to evaluate a project's transportation impacts. With the California Natural Resources Agency's certification and adoption of the changes to the CEQA Guidelines, automobile delay, as measured by "level of service" and other similar metrics, no longer constitutes a significant environmental effect under CEQA (California 2025b).

Caltrans. As the owner and operator of the State Highway System, Caltrans implements established state planning priorities in all functional plans, programs, and activities. Caltrans is responsible for coordinating and consulting with local jurisdictions when proposed local land use planning and development may impact state highway facilities. To comply with SB 743 implementation, the Caltrans Transportation Impact Study Guide (Caltrans 2020a), replaced the Guide for the Preparation of Traffic Impact Studies (Caltrans 2002). Per the 2020 Transportation Impact Study Guide, Caltrans' primary review focus is VMT, replacing LOS as the metric used in CEQA transportation analyses. Caltrans recommends use of OPR's[1] recommended thresholds and guidance on methods of VMT assessment found in OPR's Technical Advisory (OPR 2018). In addition to VMT, Caltrans has developed an interim Local Development and Intergovernmental Review Safety Review Practitioners Guidance (Caltrans 2020b) which may request a targeted operational and safety analysis to address a specific geometric or operational issue related to the State Highway System and connections with the State Highway System (Caltrans 2020b).

Manual on Uniform Traffic Control Devices (MUTCD). The MUTCD provides standards and guidelines for the design and usage of traffic control devices, such as signs, signals, and pavement markings, to ensure uniformity and consistency on roads and highways across the United States. It regulates construction-related signage and striping, offering guidelines for temporary traffic control in work zones. It ensures consistent and safe practices on roads during construction activities.

Local

2008 Solano County General Plan. Solano County General Plan Chapter 7, Transportation presents a summary of existing facilities and operations, plus provides the framework for decisions regarding the countywide multimodal transportation system. It sets community goals, policies, standards and implementation programs.

The goals of the Transportation and Circulation chapter of the Solano County General Plan (Solano County 2008) address the County's desire to address circulation concerns. The following policies and implementation programs provide a general framework for County circulation.

1 Since the development of the VMT guidelines, OPR was renamed in July 2024 to the California Governor's Office of Land Use and Climate Innovation (LCI)

Policy TC.P-4: Evaluate proposals for new development for their compatibility with and potential effects on transportation systems.

Policy TC.P-5: Fairly attribute to each development the cost of on- and off-site improvements needed for state and county roads and other transportation systems to accommodate that development, including the potential use of development impact fees to generate revenue.

Implementation Program TC.I-2: Promote development review and mitigation (including the use of transportation impact fees) that focuses on upgrading county roads to County design standards if the new development significantly contributes to the need to upgrade these roads, whether the new development occurs inside or outside of a city.

Solano County Comprehensive Transportation Plan 2040. This Comprehensive Transportation Plan (CTP) assessed the current state of the County transportation system, established goals, identified more detailed strategies to meet the goals and presented action plans to implement the strategies.

Solano County Ordinance Code. The Solano County Ordinance Code contains the laws passed and enforced by the County. Chapter 17 establishes a procedure for the use of non-regulatory traffic control devices and all striping and pavement markings. Section 24-14 defines the regulations that the proposed development must follow regarding any work proposed in road rights-of-way.

City of Vacaville General Plan 2035. The City of Vacaville General Plan provides a vision for the future and established a framework and policy direction for how Vacaville should grow and change. As proposed to be amended, the Transportation Element of the City's General Plan sets forth the following goals, policies, and actions that are directly or indirectly related to vehicle miles traveled.

Goal TR-3: Take proactive steps to reduce greenhouse gas emissions caused by VMT in Vacaville.

Policy TR-P3.3: Evaluate development proposals using VMT measurement techniques and significance thresholds from the Senate Bill (SB) 743 Implementation Guidelines for the City of Vacaville.

Goal TR-6: Require necessary transportation improvements from new development.

Policy TR-P6.1: As part of development approvals, require (through conditions of approvals) that necessary traffic improvements be constructed in time to accommodate trips generated by the project.

Policy TR-P6.2: In order to ensure that adequate roadway capacity is provided for the buildout of the General Plan and that new development does not preclude the

construction of adequate circulation facilities, require all new development to provide right-of-way dedications consistent with the Transportation Element.

Goal TR-12: Improve air quality from transportation sources to protect human and environmental health and to minimize impacts on sensitive populations.

Policy TR-P12.1: Prohibit overnight parking of medium- and heavy-duty trucks on any street in or within 500 feet of a residential neighborhood.

Policy TR-P12.2: Prohibit idling of on-road and off-road diesel vehicles and equipment for more than five minutes.

City of Vacaville Traffic Engineering Division Traffic Control Plan Guidelines. The City of Vacaville Traffic Engineering Division offers the following guidelines regarding traffic control plans:

The basic objective of each traffic control plan is to permit the contractor to work within the public right of way efficiently and effectively, while maintaining a safe, uniform flow of traffic. Both construction work and the public must be given equal consideration when developing a traffic control plan. In addition, when considering the public, attention must be given to all aspects of travel through the work zone: i.e., vehicular, bicycle, and pedestrian.

Cumulative

A master list of past, present, and reasonably foreseeable projects that may be relevant to the cumulative analysis for each issue area is provided in **Appendix A, Table A-1** and **Figure A-1**.

The geographic extent for the transportation analysis of cumulative impacts would be the study area roadway segments and intersections used for construction and operations of the project. Projects that could have cumulative transportation impacts with the Corby BESS project are: Project 2 (Vaca Dixon Power Center), and Project 10 (Weber Road Construction Yard).

5.14.2 Environmental Impacts

TRANSPORTATION Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?	☐	☒	☐	☐
b. Conflict or be inconsistent with CEQA Guidelines, section 15064.3, subdivision (b)?	☐	☐	☒	☐

TRANSPORTATION Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
c. Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
d. Result in inadequate emergency access?	☐	☐	☒	☐

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, transportation.

5.14.2.1 Methodology and Thresholds of Significance

Methodology

In addition to the environmental checklist, CEC staff used the following methodology and thresholds of significance to evaluate the project.

The potential transportation impacts of the project have been evaluated using a variety of resources, including the transportation section of the Corby BESS application (TT 2024c). Traffic impacts from implementation of the project are evaluated for the site by estimating trip generation for both the construction and operational phases of the project. Trip generation is based on the number of workers (both during construction and operational phases) and the expected number of trucks during construction.

An evaluation of VMT related to project construction and operation was conducted based on the CEQA Guidelines Section 15064.3(b).

Level of Service Analysis. The operations of roadway facilities are described with the term “level of service” (LOS). LOS is a qualitative description of traffic flow from a vehicle driver’s perspective based on factors such as speed, travel time, delay, and freedom to maneuver. Six levels of service are defined, ranging from LOS A (free-flow conditions) to LOS F (over-capacity conditions). LOS E corresponds to operations “at capacity.” When volumes exceed capacity, stop-and-go conditions result, and the results are designated as LOS F.

Vehicle Miles of Travel (VMT) Analysis. VMT is a measure used to describe automobile use. VMT is the product of the total number of vehicles traveling and the number of miles traveled per vehicle. In December 2018, the Governor’s Office of Planning and Research finalized new CEQA guidelines (CEQA Guidelines section 15064.3) that identify VMT as the most appropriate criterion to evaluate a project’s transportation impacts. The implementation of Senate Bill (SB) 743 eliminated the use of criteria such as auto delay, level of service or LOS, and similar measures of traffic congestion as the basis for determining significant impacts as part of CEQA compliance. The SB 743 VMT criteria were mandated to promote the reduction of greenhouse gas

emissions, the development of multimodal transportation networks, and a diversity of land uses. In compliance with SB 743 mandates, VMT is employed as one of the criteria to assess the transportation impact of projects.

The CEQA Guidelines are not specific on whether to include or exclude construction traffic and the issue has not been specifically cited in any legal opinions. To be conservative, construction VMT is included in this analysis.

Section 15064.3, subdivision (a), states, "For the purposes of this section, 'vehicle miles traveled' refers to the amount and distance of automobile travel attributable to a project. Here, the term 'automobile' refers to on-road passenger vehicles, specifically cars and light trucks." Based upon the above considerations, the analysis in Section 5.14.2.2 evaluates the worker, not trucks, trips to/from the site during the construction phase.

Thresholds of Significance

City of Vacaville. As indicated in Traffic Engineering Division Traffic Control Plan Guidelines regarding traffic control plans:

The basic objective of each traffic control plan is to permit the contractor to work within the public right of way efficiently and effectively, while maintaining a safe, uniform flow of traffic. Both construction work and the public must be given equal consideration when developing a traffic control plan. In addition, when considering the public, attention must be given to all aspects of travel through the work zone: i.e., vehicular, bicycle, and pedestrian.

Solano County General Plan Policies. The following Transportation goals are stated in the General Plan for a safe, convenient, and efficient transportation system apply to the project (Solano County 2008):

- **Goal TC.G.1:** Maintain and improve the County's transportation systems to enhance safety, resident access to basic needs, mobility, and convenience.
- **Goal TC.G.3:** Encourage land use patterns that maximize access and mobility options for commuting and other types of trips, and minimize traffic congestion, VMT, and greenhouse gas emissions.

Traffic Analysis. The VMT analysis focuses on automobile and light-duty truck trips (OPR 2018). An evaluation of VMT related to project construction and operations was conducted.

Solano County VMT Thresholds. As Solano County has not yet adopted transportation guidelines for evaluating potential project-related impacts to VMT. In the interim, the OPR's Technical Advisory and CEQA Guidelines Section 15064.3(b) Criteria for Analyzing Transportation Impacts have been used to evaluate the proposed project. For employment project, OPR's Technical Advisory states the following – "A proposed project exceeding a level of 15 percent below existing regional VMT per employee may

indicate a significant transportation impact". Accordingly, for the purposes of this study, a significant adverse impact would be identified if the project's VMT per worker is more than 15 percent below the existing baseline VMT/employee for Solano County.

5.14.2.2 Direct and Indirect Impacts

a. Would the project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities?

Construction

Less Than Significant with Mitigation Incorporated. Based on extensive level of service (LOS) calculations included in the application, all study roadways and intersections would continue to operate at LOS A and B within acceptable County and Caltrans operational standards under Existing plus Project Conditions. Most maintenance and construction activities associated with the project would be contained within the project site and would not be expected to result in the long-term closures of travel lanes or roadway segments, permanently alter the public access roadways, create new public roadways that could substantially change the travel patterns of vehicles and bicycles on surrounding roadways, or conflict with the policies and plans regarding bicycle facilities. There are no transit or pedestrian facilities adjacent to the project site that would be impacted by project-generated construction traffic. (TT 2024c).

There are no bike lanes along Weber Road or Byrnes Road adjacent to the project site. During construction, slow-moving oversize/overweight trucks could potentially disrupt the movement of vehicles within study area. However, construction would occur primarily during daylight hours and would not occur earlier than 7:00 a.m. or after 5:00 p.m., with the highest concentration of construction generated traffic occurring during the typical a.m. and p.m. peak commute periods. Furthermore, the analyzed project-generated traffic would be related to temporary construction whose short-term traffic increases end when construction activities are completed. While construction traffic would not result in unacceptable LOS, based on the traffic modeling in the application, construction traffic would greatly increase the existing baseline traffic levels (three times that peak-hour traffic movements at some intersections) (TT 2024c). CEC staff recommends Condition of Certification (COC) **TRANS-1** that outlines a Construction Management Plan (CMP) to reduce short-term operational effects of construction traffic. Strategies in the CMP would focus on safety related to truck traffic to and from the site. With implementation of the CMP, the project would not conflict with a plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. With implementation COC **TRANS-1**, the project traffic impact during construction would have a less than significant impact on the local circulation system.

For non-jurisdictional project components of the CEC's Opt-In Certification, PG&E would have minimal impact on the local roads. The workers would be expected to enter the

area of the Point of Change of Ownership (POCO) from Weber Road to access the orchard area for the transmission structure. The limited vehicles on the existing orchard roads would not conflict with the County circulation system, including transit, roadway, bicycle, and pedestrian facilities. A Caltrans encroachment permit would be needed for the transmission line crossing of I-80. The portion of the PG&E construction on the northwest side of I-80 would not affect any roadways before connecting to the Vaca-Dixon Substation. The PG&E construction would have a less than significant impact on the local circulation system.

Operation

Less Than Significant. There would be no permanent staff on-site during normal operation and maintenance of the battery facility and gen-tie, including PG&E portion of the gen-tie. The Corby BESS would require up to six part-time personnel for inspections, repairs and adjustments. These personnel could arrive and depart at any time during the day and not just during peak hours. As such, the operational peak hour trips are anticipated to only be three to four vehicles, which is not perceptible or significant.

Based on the assessment, the addition of the negligible project-generated traffic during operations would not cause a substantial increase in traffic volumes affecting the efficiency of the transportation system, including transit, roadway, bicycle, and pedestrian facilities. Therefore, project operations would not conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities, resulting in a less than significant impact to the circulation system.

b. Would the project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)?

Construction

Less Than Significant Impact. During project construction, daily trips made by workers and delivery/haul trucks to and from the project would result in an increase in VMT. However, this increase in VMT would be temporary in nature, only lasting the duration of the construction phase.

Vehicle-trip generation (for workers) as a result of project construction has been summarized in **Table 5.14-3**. As stated in **Section 3, Project Description**, the project construction would require an average workforce of approximately 80 workers over a 15-month construction period, with a peak workforce of approximately 131. The Application states that the average trip length for workers, haul trucks, and vendor trucks is expected to be 22.1 miles. To estimate the worker VMT for the construction phase of the project, daily worker trips of 166 (with PG&E included) were multiplied by an average trip length of 22.1 miles. The total worker VMT was then normalized over the 35-year project life, which was estimated as 9,100 days. CEC staff includes estimates for the traffic from PG&E construction of the non-jurisdictional components. The estimates were for 20

workers for 40 days. The calculation of normalized daily VMT was very insensitive to the PG&E construction assumptions because the length of construction for the PG&E portion would be only a small percentage construction time for the BESS and other jurisdictional project components.

As shown in **Table 5.14-3**, the normalized project's daily VMT (miles) per worker is estimated to be 1.5. The threshold of significance is 14.8 miles (15% below existing County average). Therefore, the normalized daily VMT per worker of 1.5 VMT per worker for the project's construction is well below the regional threshold of 14.8 VMT per employee. Therefore, the construction phase of the project (including PG&E construction) would result in a less-than-significant VMT impact. Therefore, the construction of the proposed project would not conflict or be inconsistent with CEQA Guidelines Sections 15064.3(b)(1), and transportation impacts would be less than significant.

TABLE 5.14-3 DAILY AVERAGE WORKER VMT DURING CONSTRUCTION PHASE

Item	Amount
Average Daily Number of Workers over Life of Construction	83
Worker Trips per Day (2 trips/worker)	166
Average Miles per Trip	22.1
Expected Total Construction Days	320
Worker VMT during Construction (miles)	1,166,880
Project Life (35 years, expressed in days)	9,100
Daily Worker VMT (miles) (total divided by number of days)	128
Average VMT (miles) per Worker (daily VMT divided by number of workers)	1.5
Solano County Average VMT (miles)/employee (from Fehr & Peers VMT+)	17.4
Threshold of Significance (15% below Solano County average) (miles)	14.8

Notes:
1) Project Description states that construction activities are expected to require an average workforce of approximately 80 workers over a 15-month construction period. Estimated average PG&E workers were added to the total based on estimated 20 workers over 40 days. This raised the overall average to 83 workers.
2) Application states that the average trip length for workers, haul trucks, and vendor trucks is expected to be 22.1 miles.
3) Project Description states that project construction would typically include a total of five shifts per week (Monday through Friday). Therefore, total construction days are 5 days per week times 15 months (or 64 weeks) equals 320 construction days.
4) Worker VMT during Construction is equal to Worker Trips per Day (160) times Average Miles per Trip (22.1 miles) times 320 Construction Days equals 1,131,520 miles
5) Project Life is 35 years based on 260 commute days per year or 9,100 days.
6) Daily Worker VMT is the Worker VMT during Construction (1,131,520 miles) divided by Project Life (9,100 days) equals 124 miles per day.
7) Average VMT per Worker is the Daily Worker VMT (124 miles per day) divided by the Average Daily Number of Workers over the Life of Construction (80) equals 1.55 miles
8) According to Fehr & Peers' VMTIndex data, Solano County's average home-based work (HBW) VMT per worker—essentially the VMT per employee commuting—is 17.4 miles per day. This metric reflects the daily commute distance, which is higher than the statewide average of 15.3 VMT per worker.

Operation

Less Than Significant Impact. During on-going operations, the project is expected to require very few workers. There would be no permanent staff on-site during normal operation and maintenance of the battery facility and no staff for the gen-tie line (including PG&E portion of the gen-tie line). The project would require up to six part-time personnel for inspections, repairs and adjustments. These personnel could arrive and depart at any time during the day – not just during peak hours. As such, the operational peak hour trips are anticipated to only be three to four vehicles, which is not perceptible or significant. Up to 20 personnel for approximately one week would be on-site annually for major maintenance inspections. Also, a crew of approximately 20 additional workers would be onsite for approximately three months to install and connect additional batteries when battery augmentation is required (TT 2024c). The project-generated VMT during operations would be negligible. Therefore, the project would not conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b) and the VMT impact would be less than significant.

c. Would the project substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?

Construction and Operation

Less Than Significant with Mitigation Incorporated. The project would not include any new off-site roadway design features, nor would it alter any existing geometric design features along any County roads. There would be no changes to the existing off-site circulation on County roads.

The project would construct three site access driveways along Byrnes Road that would conform to Solano County sight distance standards and would not introduce new hazards. All project infrastructure would be set back from public intersections to avoid any sight distance hazards (TT 2024c, TT 2026a).

The project would interconnect with the nearby PG&E Vaca-Dixon Substation via a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line, portions of which would be installed overhead and underground. The first section would travel east-west along Kilkenny Road and cross it at one point. Draft traffic control plans for each Underground Route Option were developed in accordance with the City of Vacaville Traffic Control Plan guidelines and the California Manual on Uniform Traffic Control Devices 2014 Edition, Revision 8 Part 6, to provide safe and efficient flow of traffic to the project site and maintain continuous access to all surrounding properties along Kilkenny Road during all phases of construction (see Project Application Appendix 4.17-I) (TT 2024r). As recommended by COC **LAND-3**, an Improvement Plan shall be prepared for the work within the City of Vacaville's ROW consistent with the City's Municipal Code Section 14.12.040.100 for encroachment permits.

Some construction equipment and facility materials may be transported to the site by oversize/overweight vehicles. This can create a hazard by limiting the field of view for drivers. Oversize vehicle loads must comply with permit-related and other requirements of the California Vehicle Code and California Streets and Highway Code. California Highway Patrol, City of Vacaville, and Solano County may require oversize/overweight load permits, which would specify whether California Highway Patrol escorts are required during oversize/overweight vehicle trips. Given the low traffic volumes on area roads, construction vehicles are not anticipated to cause hazards to other roadway users. The project would not include any design feature or use vehicles with incompatible uses that would create a hazard on the roadways surrounding the project site.

CEC staff recommends COC **TRANS-1** for the development of a Construction Management Plan (CMP) for traffic to mitigate potential hazards during construction. With the implementation of the CMP, potential impacts due to slow-moving over-sized vehicles and/or sight-distance constraints would be mitigated. Therefore, impacts associated with hazardous design features or incompatible land uses would be less than significant.

For non-jurisdictional project components there would be no impact. PG&E would not alter any existing geometric design features along any County or City roads.

Operation

Less Than Significant Impact. As described above, the project would not include any new off-site roadway design features, nor would it alter any existing geometric design features along any County roads. A detailed in criteria "c," above, the project-generated vehicle trips during operations would be negligible. Therefore, no sharp curves, dangerous intersections, or incompatible uses would be introduced by the project. The project's impact during operations would be less than significant.

d. Would the project result in inadequate emergency access?

Construction / Operation

Less Than Significant Impact. Emergency vehicles would maintain right-of-way over project-related vehicles. Operational activities would not permanently alter any roadways or create any traffic conditions that would prevent access for emergency vehicles. The addition of project-generated traffic during construction and normal operations along study roadways and at study intersections would have a negligible effect on emergency vehicles, as all vehicles are required to yield to emergency response vehicles. The draft traffic control plans developed for each Underground Route Option identify appropriate traffic detour routes that would ensure that emergency access is maintained during construction. Adequate traffic control measures would also be implemented during access road construction to the Corby BESS site (off Byrnes Road) to maintain emergency access. The PG&E construction of transmission structures would have no impact on Solano County or City of Vacaville roads and would not affect

emergency access. Therefore, the project would result in less than significant impacts related to emergency access.

5.14.2.3 Cumulative Impacts

Construction

Less Than Significant with Mitigation Incorporated. Based on the analysis below, cumulative construction traffic would not result in a substantial increase in traffic volumes within the transportation system affecting the efficiency of the transportation system, including transit, roadway, bicycle, and pedestrian facilities (none exist in the immediate area).

Project 2 (Vaca Dixon Power Center Project) and Project 10 (Weber Road Construction Yard are the only projects identified in **Appendix A, Table A-1** and **Figure A-1** with locations that could combine with the project to create a cumulative construction transportation impact. Since the Weber Road Construction Yard has been completed it would not have cumulative construction transportation impacts. The Vaca Dixon Power Center Project could have cumulative construction transportation impacts if it were constructed at the same time as the construction of the Corby BESS project. Assuming the projects are approved, if they are constructed at the same time, the CEC would have Construction Management Plans for both projects to reduce potential impacts of transportation to less than significant. COC **TRANS-1** would require that traffic control plans are prepared and implemented as necessary to address construction staging, as well as any roadway or lane closures and shall include any signage, traffic control or roadway lighting improvements deemed necessary during construction. The plans shall also include recommendations for any temporary and permanent road improvements that are necessary to accommodate trucks during either construction or normal operations.

Operation

Less Than Significant. The project-generated VMT during operations would be negligible. The addition of minimal project-generated traffic to the cumulative scenario during project operations would not cause a substantial increase in VMT or a substantial increase in traffic volumes within the transportation system affecting the efficiency of the transportation system, including transit, roadway, bicycle, and pedestrian facilities (none exist in the immediate area).

Cumulative Project Trip Generation & Distribution

For cumulative traffic impacts, staff reviewed the cumulative projects listed in **Appendix A, Table A-2**. Operations trip generation from the Corby BESS project site would be negligible, and all of the cumulative projects are either maintenance projects or far enough away from the Corby project site that cumulative traffic volumes are expected to be less than significant.

Roadway LOS with Cumulative Operational Traffic

Due to the low expected cumulative trip generation around the project site, the assessment indicates that all roadway segments are projected to operate acceptably (LOS C or better) with the addition of operations traffic in the cumulative scenario (TT 2024c, TT 2024r).

5.14.3 Project Conformance with Applicable LORS

Table 5.14-4 below details CEC staff's determination of conformance with applicable local, state and federal LORS, including any proposed COCs, where applicable, to ensure the CEC's jurisdictional project components would comply with LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the project would conform with all applicable LORS. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.14-4 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Code of Federal Regulations	
Title 49 CFR, Subtitle B, Sections 171-177 and 350-399 Requires proper handling and storage of hazardous materials during transportation.	**Yes.** The project transportation would align with all established standards for the transportation of hazardous materials. See COC **TRANS-2**.
Title 14 CFR, Part 77, Section 77.9 Requires notification of the Federal Aviation Administration (FAA) of any construction or alterations exceeding 200 feet above ground level. Also requires FAA notification of any construction or alteration of greater height than an imaginary surface extending outward and upward at a slope of 100 to 1 for a horizontal distance of 20,000 feet from the nearest point of the nearest runway of an airport with at least one runway more than3,200 feet in length.	**Yes.** Construction would not exceed 200 feet above ground level and no airports are situated within 20,000 feet of the project; consequently, this requirement does not apply.
State	
California Vehicle Code (CVC)	
CVC Sections 13369, 15275, and 15278 Addresses the licensing of drivers and classifications of licenses required for the operation of particular types of vehicles. In addition, certificates permitting the operation of vehicles transporting hazardous materials are required.	**Yes.** The project would follow the guidelines specified in these sections of the CVC. See COC **TRANS-2, TRANS-3**.
CVC Section 25160 et seq. Addresses the safe transport of hazardous materials.	**Yes.** The project would follow the guidelines specified in these sections of the CVC.
CVC Sections 2500-2505 Authorizes the issuance of licenses by the Commissioner of the CHP for the transportation of hazardous materials including explosives.	**Yes.** The project would follow the guidelines specified in these sections of the CVC.
CVC Section 31300 et seq. Requires transporters to meet proper storage and handling standards for transporting hazardous materials on public roads.	**Yes.** Transporters would comply with standards for the transportation of hazardous materials on state highways throughout construction and

TABLE 5.14-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
	operations. The State Emergency Response Commission (SERC) would ensure adherence to CVC Section 31303, mandating that shippers of hazardous materials opt for the shortest route possible to and from the site.
CVC Sections 31600 - 31620 Regulates the transportation of explosive materials.	**Yes.** The project would conform to CVC §31600 – 31620.
CVC Sections 32000 - 32053 Regulates the licensing of carriers of hazardous materials and includes noticing requirements.	**Yes.** The project would conform to CVC §31600 – 31620.
CVC Sections 32100 - 32109 and 32105 Establishes special requirements for the transportation of substances presenting inhalation hazard and poisonous gases and require that shippers of inhalation or explosive materials contact the CHP and apply for a Hazardous Material Transportation License.	**Yes.** The project would comply by mandating shippers of inhalation or explosive materials to reach out to the CHP and secure a Hazardous Materials Transportation License.
CVC Sections 34000 - 34121 Establishes special requirements for the transportation of flammable and combustible fluids over public roads and highways.	**Yes.** The project would conform to CVC §§34000 – 34121.
CVC Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5–7, 34506, 34507.5 and 34510–11 Regulates the safe operation of vehicles, including those used to transport hazardous materials.	**Yes.** The project would follow the guidelines specified in these sections of the CVC.
CVC Sections 35780 Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	**Yes.** Transporters would secure transportation permits for all overloads, as mandated.
CVC Sections 35550 - 35559 Regulates weight and load limitations.	**Yes.** The project would follow the guidelines specified in these sections of the CVC.
California Streets and Highways Code	
S&HC Sections 660, 670, 1450, 1460 et seq., 1470, and 1480 Regulates right-of-way encroachment and the granting of permits for encroachments on State and County roads.	**Yes.** The project would follow the guidelines specified in these sections of the S&HC.
S&HC Sections 117, 660 - 711 Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery.	**Yes.** Encroachment permits would be obtained by transporters, as required.
S&HC Sections 660 - 711 Requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.	**Yes.** Transportation permits would be obtained by transporters for all overloads, as required.
California State Planning Law	
Government Code, Section 65302 Requires that the project must conform to the General Plan.	**Yes.** The project would align with the provisions of the Solano County's General Plan.
Local	
Solano County Ordinance Code	

TABLE 5.14-4 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Chapter 17 establishes a procedure for the use of non-regulatory traffic control devices and all striping and pavement markings. Chapter 24-14 defines the regulations that the proposed development must follow regarding any work proposed in road rights-of-way.	**Yes.** The project would comply with these sections of Solano County Municipal Code.
Solano County General Plan	
Chapter 7 specifies long-term planning goals and policies for transportation infrastructure system circulation and safety quality within Solano County.	**Yes.** No substantial impact on the County's traffic and transportation infrastructure would be caused by the project.
Solano Comprehensive Transportation Plan 2040	
The Plan established goals, identifies strategies and implementable action plans that help the Solano Transportation Authority to achieve a safe and sustainable multi-modal transportation system.	**Yes.** No substantial impact on the County's traffic and transportation infrastructure would be caused by the project.
City of Vacaville General Plan 2035	
The Transportation Element defines the long-term vision for citywide mobility and sets goals and policies that respond to existing conditions and future changes.	**Yes.** No substantial impact on the City's traffic and transportation infrastructure would be caused by the project.

5.14.4 Conclusions and Recommendations

As discussed above, with implementation of COCs, the project would have a less than significant impact related to transportation and would conform with applicable LORS. Staff recommends adopting the COCs as detailed in subsection "5.14.5 Proposed Conditions of Certification." No mitigation measures are needed for the non-jurisdictional project components to be constructed and operated by PG&E.

5.14.5 Proposed Conditions of Certification

TRANS-1 The project owner shall prepare and implement a Construction Management Plan (CMP). The CMP shall address the movement of workers, vehicles, equipment, and materials, including arrival and departure schedules, carpooling, a parking/staging plan, and designated workforce and delivery routes. Traffic control plans shall be prepared as necessary to address construction staging, as well as any roadway or lane closures and shall include any signage, traffic control or roadway lighting improvements deemed necessary during construction. The CMP shall address means of access for emergency vehicles to the project, as well as means of maintaining access to any adjacent residential and commercial property during the construction of the project. The CMP shall also include recommendations for any temporary and permanent road improvements that are necessary to accommodate trucks during either construction or normal operations.

The CMP shall include procedures to restore any damage to existing roadways caused by project construction traffic. The construction contractor shall work

with Solano County, City of Vacaville, and Caltrans to prepare a schedule and mitigation plan for the roadways along construction routes, in accordance with the procedures established by the CMP.

Verification: At least 60 calendar days prior to the start of construction, the project owner shall submit the CMP to Caltrans, Solano County and City of Vacaville for review and comment and to the compliance project manager (CPM) for review and approval. The project owner shall also provide the CPM with a copy of the transmittal letter to Caltrans, Solano County and City of Vacaville requesting review and comment.

At least 30 calendar days prior to the start of construction, the project owner shall provide copies of any comment letters received from Caltrans, Solano County, City of Vacaville, or any other interested agencies, along with any changes to the CMP, for CPM review and approval. After CPM review and approval, the project owner shall provide completed copies of the final CMP to Caltrans, Solano County, City of Vacaville and any other interested agencies, sending copies of the correspondence to the CPM.

TRANS-2 The project owner shall comply with limitations imposed by Caltrans and other relevant jurisdictions, including Solano County and City of Vacaville, on vehicle sizes, weights, driver licensing, and truck routes as part of **HAZ-1**, which requires preparation of a Hazardous Materials Business Plan. This applies both to normal operations and during construction.

Verification: The project owner shall retain copies of permits and supporting documents on-site for CPM inspection if requested.

TRANS-3 The project owner shall ensure that permits and/or licenses are secured from the relevant administering agency, including California Highway Patrol and/or Caltrans for the transport of hazardous materials.

Verification: The project owner shall include in its Monthly Compliance Reports (MCR's) copies of all permits/licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous materials.

5.14.6 Recommended Mitigation Measures

No mitigation are recommended for the non-jurisdictional project components that would be constructed and operated by PG&E.

5.14.7 References

California 2025a – California Code Regulations, Title 14, Div. 6, Ch. 3 § 15000 et seq, CA Governor's Office of Land Use and Climate Innovation, 2025.

California 2025b – California Public Resources Code, Division 13, Chapter 2.7, Section 21099(b)(3)

Caltrans. 2002. Guide for the Preparation of Traffic Impact Studies. December. Access online at: https://www.contracosta.ca.gov/DocumentCenter/View/34121/Caltrans2002-TISGuidelines-PDF

Caltrans. 2020a. Vehicle Miles Traveled-Focused Transportation Impact Study Guide. May 20. Accessed online at: https://dot.ca.gov/-/media/dotmedia/programs/transportation-planning/documents/sb-743/2020-05-20-approved-vmtfocused-tisg-a11y.pdf

Caltrans. 2020b. Interim Local Development and Intergovernmental Review Safety Review Practitioners. Accessed online at: LDR Safety Review Practitioners Guidance

Caltrans 2025a – Caltrans 2025 – Caltrans GIS Data Traffic Volumes AADT. Accessed online at: https://gisdata-caltrans.opendata.arcgis.com/

Caltrans 2025b – California Department of Transportation, "California Scenic Highway Mapping System", 2025, Accessed online at: https://www.arcgis.com/apps/webappviewer/index.html?id=465dfd3d807c46cc8e8057116f1aacaa

FAA 2026 – Code of Federal Regulations, Part 77, United States Government, February 17. 2026.

F&P 2026 – "VMT+", Fehr & Peers, 2026. Accessed online at https://www.arcgis.com/apps/dashboards/e73ae2a501884a50ad2cae390fc6297b

LUCP 2024 – Travis Air Force Base Land Use Compatibility Plan, County of Solano Department of Natural Resources, August 8, 2024, Access online at: https://content.solanocounty.gov/sites/default/files/2025-05/Travis%20AFB%20LUCP%20%282024%29_0.pdf

OPR (California Governor's Office of Planning and Research). 2018. Technical Advisory on Evaluating Transportation Impacts in CEQA. December 2018. Accessed online at: http://opr.ca.gov/docs/20190122-743_Technical_Advisory.pdf

Solano County 2008 – Solano County General Plan. Solano County, November 2008. Accessed online at https://www.solanocounty.gov/government/resource-management/planning-services/2008-solano-county-general-plan

Solano County 2015 – Solano Rail Facilities Plan Update. Solano Transportation Authority, April 2015, Accessed online at: https://sta.ca.gov/wp-content/uploads/2019/01/STA-Rail-Facilities-Plan-2015.pdf

Solano County 2020a – Solano County Comprehensive Transportation Plan 2040. Solano Transportation Authority, June 26, 2020, Accessed online at: https://sta.ca.gov/wp-content/uploads/2018/06/CTP_2020_Final-updated.pdf

Solano County 2020b – Solano County Active Transportation Plan. Solano Transportation Authority, 2020, Accessed online at: https://sta.ca.gov/wp-content/uploads/2020/06/Solano-Countywide-Active-Transportation-Plan.pdf

Solano County 2025 – Solano County Code, November 4, 2025. Accessed online at https://www.codepublishing.com/CA/SolanoCounty/

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024r – Tetra Tech (TN 259899). Volume 2 App 4-17 Transportation Appendices. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026a – Tetra Tech (TN 268258). Project Description Update #2. Dated January 16, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026g – Tetra Tech (TN 268540). Application Section 2 Project Description markup file. Dated February 9, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

5.15 Visual Resources

This section evaluates potential project impacts from the construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to visual resources. The proposed BESS and associated components would be constructed on an approximately 40.3-acre privately owned parcel just outside the City of Vacaville in unincorporated Solano County, California. Those proposed project components would be within the jurisdiction of CEC's Opt-In Certification. The energy generated by the BESS would be transported from the on-site substation to the nearby Pacific Gas and Electric Company (PG&E) Vaca-Dixon Substation through a 1.1-mile-long, 230-kilovolt (kV) gen-tie transmission line sited along an approximately 19.4-acre gen-tie corridor. While a majority of the gen-tie line would be a project component within the jurisdiction of CEC's Opt-In Certification, the last approximately 0.2 miles of the gen-tie line, including the span of Interstate 80 (I-80), would be a non-jurisdictional project component as would the proposed new Corby Bay at Vaca-Dixon Substation. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.15.1 Environmental Setting

The proposed project site is relatively level and is currently used as agricultural land for row crops. CEC staff reviewed the applicant-prepared inventory of scenic resources extending out to 5 miles from the project site (**Figure 5.15-1**) and found no notable scenic resources within 5 miles of the project site.

The project site is bordered by Kilkenny Road on the north and Byrnes Road on the east; both are local access roads. Interstate 80 is approximately 0.6 miles northwest of the project site. The project site is surrounded by existing agricultural lands, with rural residences located to the north and west along Kilkenny and Byrnes roads. CEC staff has determined that the Catherine Kilkenny Residence, located on Kilkenny Road, appears eligible for the California Register of Historical Resources per the analysis in **Section 5.4, Cultural and Tribal Cultural Resources**. Agricultural uses in the immediate area include orchards and row crops. Energy-related uses are found near the project site and include the PG&E Vaca-Dixon Substation to the northwest (approximately 0.7 miles) and 500 kV transmission towers and lines to the west and southwest.The gen-tie line would pass through an existing orchard before spanning I-80.

There is currently no lighting at the project site, and as previously noted, the landscape immediately surrounding the project site is primarily agricultural with few, scattered, rural residences. Therefore, nighttime lighting in the immediate area is limited, consisting mainly of light from windows of residential and agricultural structures and intermittent/temporary lighting (headlights) from vehicles on the adjacent and nearby local roads.

Regulatory

Federal, state and local government laws, ordinances, regulations, and standards (LORS) relating to aesthetics/visual resources and the protection of scenic quality applicable to the proposed project and project site are set forth below.

Federal

CEC staff found no applicable federal regulations related to the protection of scenic quality that applied specifically to the proposed project, project site, or gen-tie corridor.

State

California Scenic Highway Program. The California Scenic Highway Program was established by the Legislature as Article 2.5 (commencing with section 260) of the Streets and Highways Code. The purpose of the program is to protect and enhance the natural scenic beauty of California highways and adjacent corridors through special conservation treatment.

Section 263 of the Streets and Highways Code, the "State Scenic Highway System List," provides a list of highways that have been either officially designated or are eligible for designation as a state scenic highway (Caltrans 2025).

Local

Solano County General Plan Chapter 4 Resources. The Solano County General Plan Chapter Four, Resources (Solano County 2008) includes policies and regulations designed to protect and enhance scenic resources and designated scenic roadways and to reduce light pollution and preserve views of the night sky.

Scenic Resource Policies

RS.P-35: Protect the unique scenic features of Solano County, particularly hills, ridgelines, wetlands, and water bodies.

RS.P-36: Support and encourage practices that reduce light pollution and preserve views of the night sky.

RS.P-37: Protect the visual character of designated scenic roadways.

Implementation Programs

Regulations

RS.I-20: Amend the zoning Ordinance to:

- Include the area, policies, and programs of the Tri-City and County Cooperative Plan for Agriculture and Open Space Preservation.
- Direct the use of lighting fixtures that reduce glare and light pollution. The ordinance should provide standards for the type and location of lighting fixtures in development projects.

RS.I-21: Preserve the visual character of scenic roadways as shown in Figure RS-5 through design review, designating alternate routes for faster traffic, regulating off-site advertising, limiting grading in the view corridor through the grading ordinance, limiting travel speeds, and providing pullover areas with trash and recycling receptacles. (Note: County-designated scenic roadways, I-80 and State Route [SR] 113, shown on General Plan Figure RS-5, are also shown on **Figure 5.15-1** later in this section).

Development Review

RS.I-22: In new developments, require the use of fixtures that direct light toward target areas and shield it from spillage.

City of Vacaville General Plan Conservation and Open Space Element. The City of Vacaville General Plan Conservation and Open Space Element (Solano County 2008) includes policies designed to protect scenic features and view corridors to those features.

Scenic Resources

Goal COS-8: Maintain and enhance the quality of Vacaville's scenic and visual resources.

Policy COS-P8.1: Preserve scenic features and the feel of a city surrounded by open space and preserve view corridors to the hills and other significant natural areas.

CEC staff discusses the proposed project's conformance with applicable LORS in subsection 5.15.3.

Cumulative

The landscape in the area surrounding the proposed project demonstrates evidence of past and present visible disturbances related to electric energy transmission, transportation infrastructure, residential and commercial development, and agriculture. These past and present projects may be relevant for a cumulative analysis of the proposed project and the effects pertaining to aesthetics/visual resources from these projects. CEC staff reviewed the cumulative projects list **Appendix A, Cumulative Scenario**, **Table A-1** and determined that only the Vaca Dixon Power Center Project (Project #2 on BESS Cumulative Map, **Figure A-1**) would have the potential to create cumulative visual impacts in combination with the proposed project.

5.15.2 Environmental Impacts

AESTHETICS Except as provided in Public Resources Code Section 21099[1], would the project:	**Potentially Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings (public views are those that are experienced from publicly accessible vantage point)? If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?	☒	☐	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☒	☐	☐

California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics as amended December 28, 2018.
Note: the conclusions presented in this chart apply to both jurisdictional and non-jurisdictional project components.

5.15.2.1 Methodology and Thresholds of Significance

The CEC evaluates a proposed project in accordance with the California Environmental Quality Act (CEQA) codified in California Public Resources Code (Pub. Resources Code) section (§) 21000 et seq., and the Guidelines for the Implementation of the California Environmental Quality Act (CEQA Guidelines) codified in the California Code of Regulations (Cal. Code Regs.), Title 14, § 15000 et seq.

CEQA states 'Environment' means the physical conditions which exist within the area which will be affected by a proposed project, including land, air, water, minerals, flora, fauna, noise, and objects of historic or aesthetic significance [emphasis added]." (Pub. Resources Code, § 21060.5)

1 Public Resources Code section 21099 asks is the proposed project an "employment center project" on an "infill site" within a "transit priority area" as defined in this section? A transit priority area is an area within a half mile (2,640 feet) of a major transit stop existing or planned. Public Resources Code section 21099(d)(1) states "Aesthetic and parking impacts of a residential, mixed-use residential, or employment center project on an infill site within a transit priority area shall not be considered significant impacts on the environment." In accordance with Public Resource Code section 21099, CEC staff has determined the proposed project is not an employment center project on an infill site within a transit priority area. A transit priority area is an area within a half-mile (2,640 feet) of a major transit stop. CEC staff viewed current Google Earth aerial and street view imagery and found no major transit stop in the vicinity.

The CEQA Guidelines state "Effects analyzed under CEQA must be related to a physical change." (Cal. Code Regs., § 15358[b])

The CEQA Guidelines also state a "'Significant effect on the environment' means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the proposed project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic or aesthetic significance [emphasis added]." (Cal. Code Regs., tit. 14, § 15382)[2]

"The determination of whether a project may have a significant effect on the environment calls for careful judgment on the part of the public agency involved, based to the extent possible on scientific and factual data. An ironclad definition of significant effect is not always possible because the significance of an activity may vary with the setting. For example, an activity which may not be significant in an urban area may be significant in a rural area." (Cal Code Regs., tit. 14, § 15064[b][1])

The CEC must assess "…the physical environmental conditions in the vicinity of the project. This environmental setting will normally constitute the baseline physical conditions by which a lead agency [3] determines whether an impact is significant." (Cal. Code Regs., tit. 14, § 15125[a])

Object of Aesthetic Significance

An exact definition of an "object of aesthetic significance" is not provided in CEQA or the CEQA Guidelines. For these analyses, an object of aesthetic significance can be explained as an object subjectively designated by the federal, state, or local government and unique to it. Also, an undesignated but popularly used or appreciated area or object of aesthetic claim of significance is considered within this definition. A lead agency may look to local planning thresholds when defining the aesthetic impact standard for the purpose of CEQA[4] (e.g., general plan, specific plan, zoning). A few often-designated objects of aesthetic significance at the federal, state, or local government levels have included:

- A geographic feature, geologic distinguishing characteristic or structure, or geomorphologic feature.
- A structure that embodies elements of architecture or engineering design, detail, materials, or craftsmanship that represent a significant innovation or is unique.
- A structure of unusual historical and usually aesthetic interest.
- A tree or group of trees recognized for their aesthetic, botanical, and ecological value, and/or age, rarity, and size.

2 In addition to Cal. Code Regs., tit. 14, § 15382 also stated in Cal. Code Regs., tit. 14, § 15360 and Public Resources Code, § 21060.5.

3 "'Lead agency' means the public agency which has the principal responsibility for carrying out or approving a project." (Cal. Code Regs., tit. 14, § 15367)

4 *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.

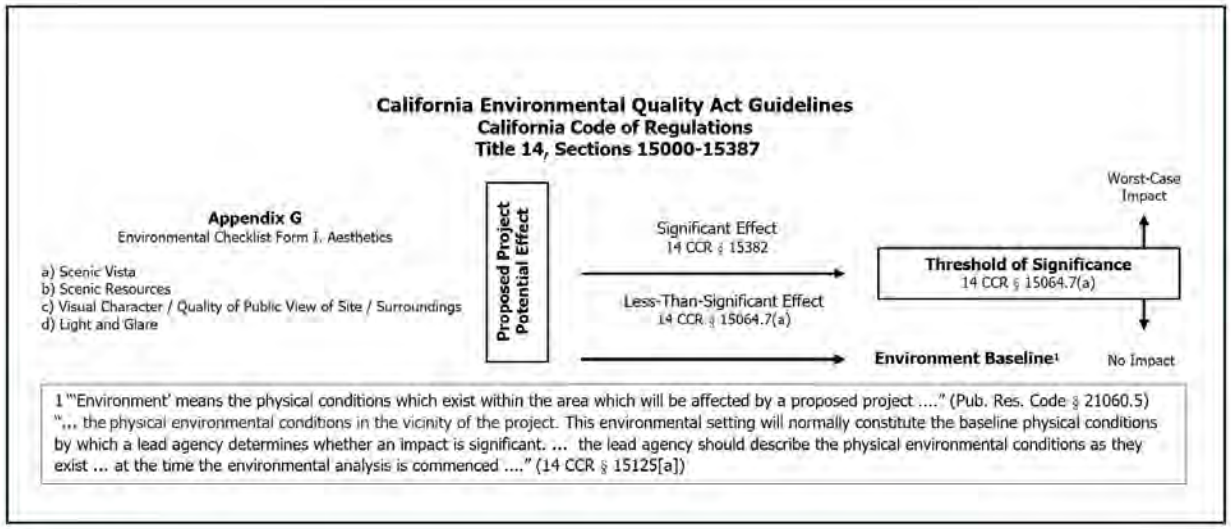
- A designed landscape.

The potential physical change by the proposed project to an existing object of aesthetic significance in the area and the existing physical environment is what is analyzed.

Environmental Factor – Aesthetics

The CEQA Guidelines *Appendix G Environmental Checklist Form, I. Aesthetics* supplies questions to answer (criteria) when evaluating if a proposed project has a significant effect on the environment involving the environmental factor "Aesthetics" (shown above). CEC staff uses these questions in this analysis. Explanations and responses to them are presented under the subheadings Scenic Vista, Scenic Resources Within a State Scenic Highway, Visual Character or Quality of Public View of a Site and its Surroundings, and Light and Glare.

"An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency…is to be reviewed in the light of what is reasonably feasible.... The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure." (Cal. Code Regs., § 15151)



Threshold of Significance

The CEQA Guidelines define a *threshold of significance* as "an identifiable quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the agency and compliance with which means the effect normally will be determined to be less than significant." (Cal. Code Regs., tit. 14, § 15064.7[a]) See CEQA Guidelines Level Of Effect On The Environment below.

"Thresholds of significance…may assist lead agencies in determining whether a proposed project may cause a significant impact. When using a threshold, the lead agency should briefly explain how compliance with the threshold means that the

proposed project's impacts are less than significant. Compliance with the threshold does not relieve a lead agency of the obligation to consider substantial evidence indicating that the project's environmental effects may still be significant." (Cal. Code Regs., tit. 14, § 15064[b][2])

"When adopting or using thresholds of significance, a lead agency may consider thresholds of significance previously adopted or recommended by other public agencies or recommended by experts, provided the decision of the lead agency to adopt such thresholds is supported by substantial evidence." (Cal. Code Regs., tit. 14, § 15064.7[c])

CEC Staff Method

CEC staff evaluates: (1) the alteration to the existing *landscape*[5] by a proposed *project*[6] using the CEQA Guidelines, Appendix G, I. Aesthetics[7] and (2) the conformance of the proposed project with applicable LORS pertaining to the protection of scenic resources.

Completing an evaluation typically entails: examining aerial and street view imagery; reviewing Geographic Information System (GIS) information; analyzing site and vicinity photographs including any photographs from a key observation point (KOP, see **Figure 5.15-2**), and analyzing photo-realistic simulation(s) of the proposed project (in most cases) in the existing landscape. It also entails assessing elevations, architectural and site development plans, drawings, and renderings; reviewing applicable federal, state, and local government codes and regulations, maps, and plans; and visiting the proposed project site, KOPs, and surrounding area.

5 Landscape is defined as "The outdoor environment, natural or built, which can be directly perceived by a person visiting and using that environment. A scene is the subset of a landscape which is viewed from one location (vantage point) looking in one direction." (Hull and Revell 1989) "The term landscape clearly focuses upon the visual properties or characteristics of the environment, these include natural and man-made elements and physical and biological resources which could be identified visually; thus, non-visual biological functions, cultural/historical values, wildlife and endangered species, wilderness value, opportunities for recreation activities and a large array of tastes, smells and feelings are not included." (Daniel and Vining 1983; Amir and Gidalizon 1990)

6 A thermal or nonthermal generating facility with a capacity of 50-megawatts or more. An energy storage facility with a capacity of 200-megawatt hours or more. (See Pub. Res. Code § 25120 and 25545-25545.2)

7 California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics as amended December 28, 2018.

CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT

Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (Cal. Code Regs., tit. 14, § 15382) (Pub. Resources. Code § 21060.5, Cal. Code Regs., tit. 14, § 15360) It also means that the physical change by the proposed project to the existing physical environment reaches the threshold of significance as, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency...." (Cal. Code Regs., tit. 14, § 15064.7[a])

Less-Than-Significant Effect with Mitigation Incorporated. The physical change by the proposed project to the existing physical environment reaches the threshold of significance, "... but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed CEQA environmental document (e.g., Negative Declaration) is released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Resources Code, § 21064.5, Cal. Code Regs., tit. 14, § 15369.5) (Pub. Resources Code, § 21002)

Less-Than-Significant Effect. The physical change by the proposed project to the existing physical environment does not reach the threshold of significance as, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, ... compliance with which means the effect normally will be determined to be less than significant." (Cal. Code Regs., tit. 14, § 15064.7[a])

5.15.2.2 Direct and Indirect Impacts

The remainder of this section presents a combined discussion of the jurisdictional and non-jurisdictional project components. Jurisdictional project components within CEC's Opt-In Certification include the primary BESS site and most of the gen-tie line (Segments 1 through 5). Non-jurisdictional project components include the last approximately 0.2 miles of the gen-tie line (Segments 6 through 10, including the span of I-80), the proposed Corby 230-kV double bus bay to be added to Vaca-Dixon Substation, and the fiber-optic telecom line to be added to the Kilkenny Road right of way. Throughout the discussions, the jurisdictional and non-jurisdictional project components are identified as appropriate. However, as noted below, KOPs 1, 2a, 2b, 3, 5a, 5b, 5c, and 6 address jurisdictional project components. KOP 4 addresses non-jurisdictional project components (the gen-tie span of I-80).

Scenic Vista

a. Would the project "have a substantial adverse effect on a scenic vista?"

Neither CEQA nor the CEQA Guidelines provide a definition of what constitutes a scenic vista. As already noted, lead agencies may look to local planning thresholds for

guidance when defining the visual impact standard for the purposes of CEQA.[8] A general plan, specific plan, zoning, or other planning document can provide guidance.

The CEC in its certification (approval) for a number of thermal power plant projects has defined a *scenic vista* as, "a distant view of high pictorial quality perceived through and along a corridor or opening."[9]

In this definition, "perceived through and along a corridor or opening" refers to the potential movement into or through a portion of landscape limited by either elevated landforms bounding the observer's field of view in a rural landscape, or dominant man-made horizontal and/or vertical massed components[10] positioned at regular intervals that bound the observer's field of view in an urban landscape. No specific observer locations form the basis for defining the visual unit boundary. Instead, a distinct change in the extent and direction of views from the ground typically determines the boundary. The space within this area is inherently variable in appearance, possessing its own distinct visual character. The scenic distinction created by the combination of components within and surrounding it enables the viewer to form a unified impression (e.g., breathtaking, stunning, unsettling, repulsive).

An example of a scenic vista in a rural landscape would be the view through and along the Yosemite Valley as seen from the Wawona Tunnel overlook in Yosemite National Park, California. In an urban landscape, two examples of a scenic vista include the view through and along the National Mall from the Washington Monument in Washington, D.C. and the view through and along Capitol Mall from the Tower Bridge to the California State Capitol building in Sacramento, California.

Once a scenic vista is identified, an adverse effect is presumed when a sizable component(s) of the proposed project physically changes the scenic vista (e.g., obstructs).

Permanent Facility

Less Than Significant Impact. The proposed project would be constructed on an approximately 40.3-acre privately owned parcel (project site) just outside the City of Vacaville in unincorporated Solano County, California. The project site is relatively level and is currently used as agricultural land for row crops. The energy generated by the proposed project would be transported from the on-site substation to the nearby PG&E

8 *Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.

9 California Energy Commission Final Decision for GWF Tracy Combined Cycle Power Plant Project Docket Number 08-AFC-7, Visual Resources, p. 321; California Energy Commission Decision for Mariposa Energy Project Docket Number 09-AFC-3, Visual Resources, p. 5; California Energy Commission Decision for Blythe Solar Power Project Docket Number 09-AFC-6, Visual Resources, p. 514; California Energy Commission Decision for Genesis Solar Energy Project Docket Number 09-AFC-8, Visual Resources, p. 7-8; California Energy Commission Decision for Pio Pico Energy Center Docket Number 11-AFC-01, Visual Resources, p. 8.5-4.

10 A "component" is an individual object that makes up the landscape, physical and visible, natural and man-made which can be described, quantified, and measured (e.g., a puzzle piece in the overall picture).

Vaca-Dixon Substation through a 1.1-mile-long, 230-kV gen-tie transmission line sited along an approximately 19.4-acre gen-tie corridor that would pass through an existing orchard before spanning I-80. As previously noted, the last approximately 0.2 miles of the gen-tie line, including the span of I-80, would be proposed non-jurisdictional project components.

The most publicly visible proposed project structures would include up to 341 (at "end of life") BESS enclosures (23.5-feet-long, 9.5-feet-tall, 8.4-feet-wide); power inverter enclosures (22-feet-long, 7-feet-tall, 7-feet-wide); proposed project substation (switch gear, power transformers, lightning arresters; tallest component being 70-feet-tall); substation control house (60-feet-long, 14-feet-wide, 11-feet-tall); up to 8 operations and maintenance storage containers (10 feet by 20 feet); sound barrier (15-feet-tall by 785-feet-long); gen-tie transmission line with monopole, H-Frame, and 3-pole Tubular Steel Pole (90 to 130-feet-tall) structures spanning a distance of approximately 1.1 miles to the northwest to connect with Vaca-Dixon Substation; and security fencing (6-feet-tall). **Table 5.15-1** provides a list of the primary Project Site Components.

See **Figures 5.15-3B, -4B, -4C -5B, -5C, -6B, -8B, -8C, -9B, -9C, -10B**, and **-11B** for simulations of the proposed project as viewed from KOPs 1 through 3 and 5a through 6, respectively.

TABLE 5.15-1 CHARACTERISTICS OF PRIMARY PROJECT COMPONENTS

Project Component	Dimensions/Size	Materials	Finishes
BESS Array			
BESS Enclosures	23.5-feet-long, 8.4-feet-wide, 9.5-feet-tall	Prefabricated Metal	Semi-gloss; Traffic Gray; RAL 7042
Inverter Enclosures	22-feet-long, 7-feet-wide, 7-feet-tall	Electrical Equipment	Gray/Dark Gray
Auxiliary Transformers	7-feet-long, 6.5-feet-wide, 8-feet-tall	Electrical Equipment	Munsell Green; 7GY 3.29/1.5
Auxiliary Switchboard	10-feet-long, 3-feet-wide, 7.5-feet-tall	Electrical Equipment	Textured Powder Coat; ANSI 61 Gray
Project Substation			
Generator Step-up Transformers	22-feet-long, 28-feet-wide, 26-feet-tall	Steel Electrical Equipment	Painted Steel – ANSI 61 Gray
Switchgear	8-feet-long, 12-feet-wide, 28-feet-tall	Electrical Equipment	Galvanized Steel
Busbar Structures	274-feet-long, 275-feet-wide, 28-feet-tall	Electrical Equipment	Galvanized Steel
Riser Structures	65-feet-tall	Galvanized Steel	Galvanized Steel
Substation Control House	60-feet-long, 14-feet-wide, 11.6-feet-tall	Concrete, Steel, Metal Alloys, Electrical Equipment	Ash Gray
Shield Poles	70-feet-tall	Galvanized Steel	Galvanized Steel
Current Limiting Reactors	25-feet-tall, 10 feet in diameter	Galvanized Steel	Galvanized Steel
Other Project Components			

TABLE 5.15-1 CHARACTERISTICS OF PRIMARY PROJECT COMPONENTS

Project Component	Dimensions/Size	Materials	Finishes
Generation Tie-Line (above ground portion – up to 10 structures) Last approximately 0.2 miles, including the span of I-80, would be a proposed non-jurisdictional project component.	90-130-foot-tall, 37.1 inches in diameter (Monopole, H-frame, and 3-Pole Tubular Steel Pole)	Galvanized Steel	Galvanized Steel
Perimeter Fence (Substation)	1,140-feet-long, 6-feet-tall	Steel	Gray
Perimeter Fence (BESS Array)	3,113-feet-long, 6-feet-tall	Steel	Gray
Sound Barrier	785-feet-long, 15-feet-tall	Blend of wood shavings and cement	Gray
Fiber Optic Poles (approximately 10 structures)	30-80-foot-tall, 13.8 inches in diameter	Wood	Brown
Water Tank	19.25 feet tall, 15 feet in diameter	Steel	Gray

Source: TN 268433, Table 3.1-1

CEC staff reviewed current aerial and street view imagery (Google Earth, Google Maps), United States Geological Survey (USGS) map information, and area maps and concluded the proposed project (including both jurisdictional and non-jurisdictional project components) would be on a low level valley floor (southern end of the Sacramento Valley) relative to the nearby Vaca Mountains (west and south) and English Hills (northwest) of the North Coast Ranges, and not within a scenic vista.

Although the County's General Plan states that the "county's agricultural landscapes, the delta and marshlands, and the oak and grass covered hills offer an abundance of scenic vistas," no specific views or vistas are identified (Solano County 2008). The project site is agricultural in character, however, there are no delta, marshlands, or oak and grass-covered hills either on the site or in the surrounding area.

While the goals of the General Plan Agricultural Reserve Overlay seek to maintain scenic agricultural landscape resources along the I-80 corridor within the Agricultural Reserve Overlay areas, the project site is not located within an Agricultural Reserve Overlay area, and the nearest Overlay boundary is approximately 0.75 miles to the northeast. Furthermore, the nearest greenbelt (Vaca-Dixon) is located approximately 1.7 miles northeast of the project site. Due to the rather extended viewing distance and established structural context (I-80 corridor, Vaca-Dixon Substation, intervening utility and high-voltage transmission lines), a casual viewer in the greenbelt area would not notice the addition of proposed project features.

While Vacaville residents value the views of the ridgelines of the Vaca Mountains (to the west and south) and English Hills (to the northwest), views of those scenic resources from the project vicinity are already somewhat compromised by existing energy

infrastructure including utility lines, high-voltage transmission lines, and the Vaca-Dixon Substation.

Therefore, given that the proposed project would not impact any designated scenic vistas, that other locally valued sensitive views are already affected by existing energy infrastructure, and the proposed project structures and buildings would not obstruct or eliminate public views of scenic resources, CEC staff has concluded that the proposed project components (both jurisdictional and non-jurisdictional) would result in a less-than-significant impact on the environment with respect to scenic vistas (see above table CEQA Guidelines Levels of Effect on the Environment).

Scenic Resources Within a State Scenic Highway

b. Would the project "substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?"

Neither CEQA nor the CEQA Guidelines provide a definition of what constitutes a scenic resource. A *scenic resource,* in addition to being designated in an adopted federal, state, or local government planning document, plan, or regulation as suggested in the above aesthetics question, may be explained as a widely recognized, natural or man-made feature tangible in the landscape. Hence, a scenic resource includes but is not limited to:

- A natural feature or object that is part of the land such as a geologic distinguishing characteristic or structure (e.g., batholith, laccolith, mesa); a geomorphologic feature produced from deposition or erosion (e.g., gorge, inselberg, moraine); a water body (e.g., lake, waterway, estuary); or a tree recognized for its aesthetic, botanical, and ecological value, or age, rarity, and size.
- A man-made feature or object that embodies elements of architecture or engineering design, detail, materials, or craftsmanship that represents a significant innovation or is unique such as the California State Capitol, Golden Gate Bridge, or Hollywood sign.
- A cultural resource,[11] historic property, or landmark. It should be recognized that cultural and historic values differ from aesthetic or scenic values (e.g., elegance, harmonious, imposing, sublime).

This analysis evaluated if the proposed project components, both jurisdictional and non-jurisdictional, would substantially damage—eliminate or obstruct—public view[12] of a

11 Cultural resources encompass all the physical evidence of past human activity. These could include buildings, structures, engineering features; prehistoric sites; historic or prehistoric artifacts or objects. These nonrenewable resources often yield unique information about past societies and environments and provide answers for modern day social and conservation problems. (NRCS 2025)

12 A public view can be defined as the area visible from a location where the public has a legal and physical right of access to real property (e.g., city sidewalk, public park, town square, state highway).

scenic resource within the viewshed of a state scenic highway and whether the proposed project would be situated so that it changes the visual appearance of a scenic resource by being in sharp contrast with the existing environment. CEC staff generally uses a three-mile[13] distance zone surrounding the project site for this analysis.

An adverse effect exists if the project would eliminate or obstruct a public view of a scenic resource and/or change its visual appearance when viewed from a state scenic highway.

Permanent Facility

Less Than Significant Impact. California Streets and Highways Code Section 263, the "State Scenic Highway System List," provides a list of highways that have been either officially designated or are eligible for designation as a state scenic highway. There are no officially designated or eligible state scenic highways near the project site (the closest officially designated scenic highway is approximately 19 miles to the southeast; the closest eligible scenic highway is approximately 9 miles to the northwest). The proposed project features would not be visible from either highway. However, I-80 (approximately 0.6 miles to the northwest of the project site [BESS location]) and SR 113, located approximately 5 miles to the east of the project site are designated as County scenic roadways. While the project would not be visible from SR 113, the gen-tie connection to Vaca-Dixon Substation (a proposed non-jurisdictional project component) would span I-80 and would be visible to freeway travelers. However, in the structural context established by the existing substation and the numerous electric transmission lines either spanning, or situated adjacent to, I-80 and connecting to the substation, the gen-tie span of I-80 would not be noticeable to the casual viewer on I-80.

Therefore, proposed jurisdictional and non-jurisdictional project components would not substantially damage scenic resources including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway. These components would also not result in a significant effect on views from I-80, a County-designated scenic highway. Therefore, the resulting impact would be less than significant under this impact criterion.

Visual Character or Quality of Public View of Site and its Surroundings

c. Would the project "in non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site

California Code of Regulations, Title 14, Division 6, Chapter 3, Article 20 Appendix G Environmental Checklist Form, I. Aesthetics c. states "Public views are those that are experienced from publicly accessible vantage point." The California Courts of Appeal, Fourth District wrote "Under CEQA, the question is whether a project will affect the environment of persons in general, not whether a project will affect particular persons." (*Mira Mar Mobile Community v. City of Oceanside* (2004) 119 Cal. App. 4th 477.)

13 "Based on the curve of the Earth: Standing on a flat surface with your eyes about 5 feet off the ground, the farthest edge that you can see is about 3 miles away." (Roland 2019)

and its surroundings? (Public views are those that are experienced from publicly accessible vantage point). If the project is in an urbanized area, would the project conflict with applicable zoning and other regulations governing scenic quality?"

An adverse effect exists if a project in a non-urbanized area significantly degrades the existing visual character or quality of public views of the site and its surroundings, or if in an urbanized area, conflicts with zoning and other regulations governing scenic quality. Based on the definition of "urbanized area" per Public Resources Code section 21071,[14] CEC staff determined that the project site is in a non-urbanized area. However, the site is also immediately adjacent to (250 feet away from) the City of Vacaville jurisdictional boundary and in close proximity to the Vacaville urban area. Therefore, the project was also evaluated for its consistency with the City of Vacaville's regulations governing scenic quality under this impact criterion.

Non-Urbanized Area Analysis

Key Observation Point Evaluation

Visual landscape assessments involve the inventory and evaluation of diverse visible attributes of the landscape for purposes of planning, design and management. As currently practiced, visual assessments require the collection of empirical (often quantitative) data for analysis through systematic means. That is, the landscape has a physical reality independent of people that can be characterized through various measurements. The landscape also has a reality that depends on our individual perceptions. These perceptions can be characterized or measured by various means."[15] CEC staff evaluates a proposed project in the landscape using an adapted descriptive inventory methodology.[16]

"Because it is difficult to describe visual appearance in words, visual assessments of the existing environment and the consequences of project alternatives should be based on 'illustrations of actual views'....Because resources and time are always limited, it is also necessary to limit the number of views analyzed: it is essential that these be

14 An "urbanized area" means either "(a) An incorporated city that meets either of the following criteria: (1) Has a population of at least 100,000 persons. (2) Has a population of less than 100,000 persons if the population of that city and not more than two contiguous incorporated cities combined equals at least 100,000 persons." (Public Resources Code section 21071[a]) An urbanized area also includes unincorporated area that satisfies the criteria in Public Resources Code section 21071(b).

15 Palmer and Robin 2001, p. 149.

16 A visual landscape assessment is a process that evaluates the quality and characteristics of a landscape. Numerous techniques of landscape evaluation have been devised. These techniques can be divided into broad categories, descriptive inventories, public preference models, and quantitative holistic methods. These methods can be further subdivided into non-quantitative and quantitative approaches including ecological, formal aesthetic, phenomenological, psychological, psychophysical models. There are also direct/indirect, quantitative/non-quantitative, and subjective/objective methods. It should be noted that not all landscape evaluation techniques comply with CEQA and/or the CEQA Guidelines.

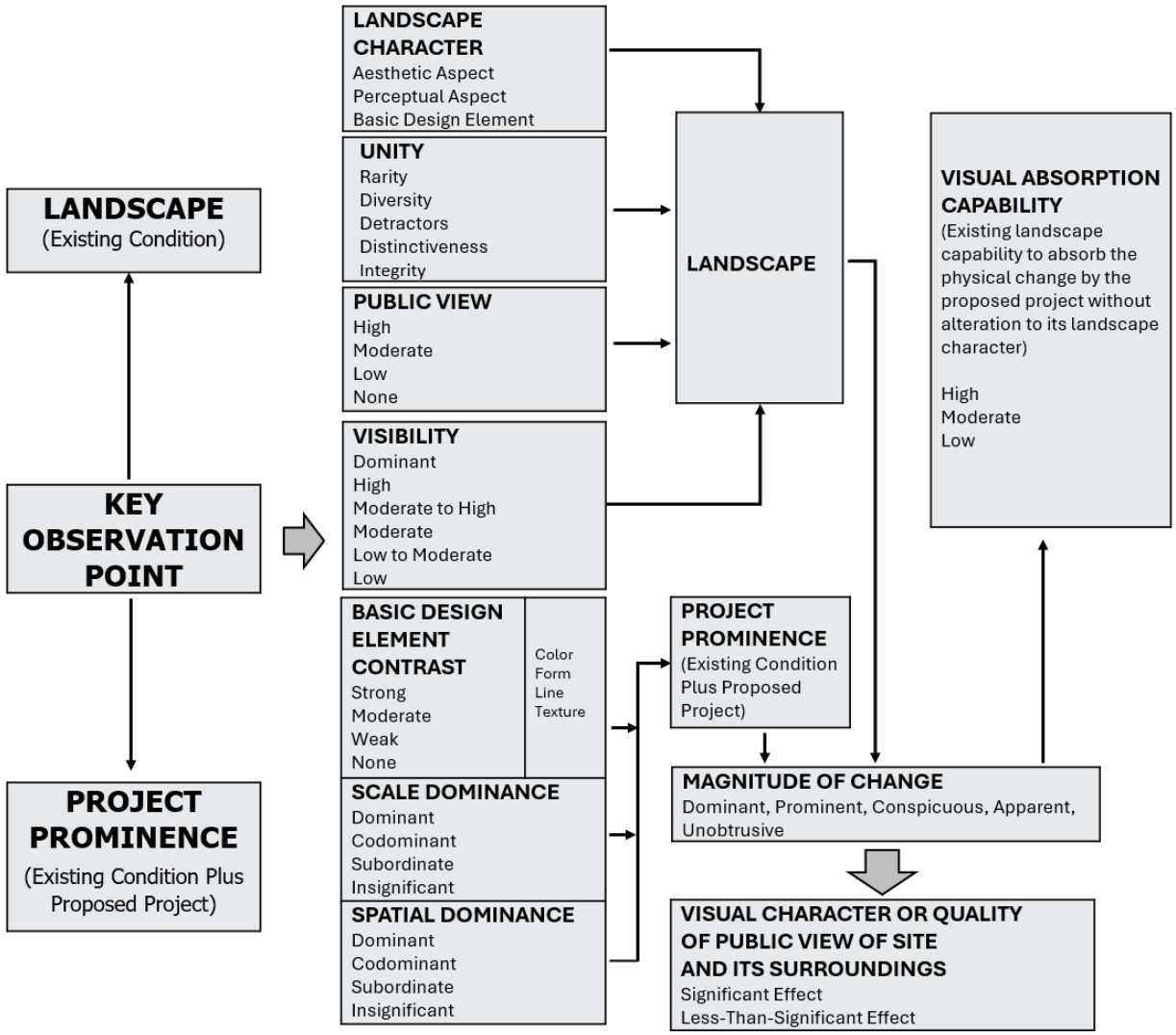
'representative views,' neither understating nor overstating the visual effects of the project." (Smardon 1986, p. 255.)

The primary purpose of a visual simulation is to portray the realistic manner and context of a proposed activity, modification, or change in the existing physical landscape. It is a photographic image that has been computer-modified to show a not-yet existing feature (e.g., the proposed project). A visual simulation is not a "real life view." It illustrates a two-dimensional view of a proposed activity from a particular viewpoint as depicted in a photograph and not as it would appear as a three-dimensional image as seen in the field with the human eye. That being said, a visual simulation is a useful tool to assist in the assessment and decision-making process, whereby better informed and more transparent judgments on visual-related effects can be made.

In accordance with CEQA and the CEQA Guidelines, CEC staff assessed the physical change to the existing physical environment caused by the proposed project components, both jurisdictional and non-jurisdictional project components. The assessment was done in terms of aesthetics, not the sensitivity of the viewer to the physical change (viewer sensitivity), which is a common mistake. See the evaluation flowchart below.

In this analysis, a key observation point (KOP) is used. A KOP is a fixed position in a publicly accessible location where a public view of the proposed project is analyzed and evaluated in the landscape. Nine KOPs were selected from which existing conditions photographs were obtained, and photo-realistic simulations were prepared (except for KOP 4). **Figure 5.15-2** displays the selected KOP locations. KOPs 1 through 3 and 5a through 6 address proposed jurisdictional project components. KOP 4 (North Meridian Road Overpass) addresses non-jurisdictional proposed project components (the gen-tie span of I-80 in this instance). CEC staff analyzed the existing conditions photographs along with their corresponding photo-realistic simulations. See **Figure 5.15-3a** through **Figure 5.15-11c**.

Evaluation Flowchart



CEC staff completed a Key Observation Point Evaluation Worksheet (worksheet) for each KOP. The completed worksheets have been attached to this section. See **Key Observation Point Evaluation Worksheets 1** through **6**. A synopsis of each worksheet is presented below.

Permanent Facility

Significant and Unavoidable Impact. As discussed in the following paragraphs, CEC staff concludes that given the existing landscape, the proposed jurisdictional project components would substantially degrade the existing visual character or quality of public views of the site and its surroundings from KOPs 2a, 2b, 3, 5a, 5b, and 5c, even with effective implementation of required Conditions of Certification (COC) **VIS-1** (Structural Surface Treatments) and **VIS-2** (Vegetative Landscape Screening). CEC staff also concludes that the proposed non-jurisdictional project components would not

substantially degrade the existing visual character or quality of public views of the site and its surroundings from KOP 4.

The most publicly visible proposed project structures would include numerous BESS enclosures (23.5-feet-long, 9.5-feet-tall, 8.4-feet-wide); power inverter enclosures (22-feet-long, 7-feet-tall, 7-feet-wide); proposed project substation (switch gear, power transformers, lightning arresters; tallest component being 70-feet-tall); up to 8 operations and maintenance storage containers (10 feet by 20 feet); sound barrier (15-feet-tall by 785-feet-long); gen-tie transmission line with monopole, H-Frame, and 3-pole Tubular Steel Pole structures; and security fencing (6-feet-tall). **Table 5.15-1** provides a list of key Project Site Components. It should be noted that these new industrial elements would occur beyond the existing transmission and substation infrastructure in the project area, thereby introducing a new contiguous, industrial footprint rather than merely clustering structures where development already exists.

KOP 1 – Kilkenny Road at I-80 – Viewing East. KOP 1 is from Kilkenny Road at the frontage to I-80. The view is to the east. From KOP 1, the proposed project site is approximately 0.85 miles to the east. See **Figure 5.15-3a** - existing conditions of proposed project site from Kilkenny Road and **Figure 5.15-3b** - existing conditions plus proposed project.

Kilkenny Road is a 2-lane, local access road that extends from Willow Road at I-80, east to Byrnes Road. The view from KOP 1 encompasses the foreground paved roadway; agricultural row crops and orchards; overhead transmission line structures and conductors; and an unpaved agricultural access road. Also visible is a more distant aggregation of trees forming a wind break around a rural residence. CEC staff did not identify an “object of aesthetic significance” at or visible from this KOP. CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project.

As shown in the simulation for KOP 1, under the proposed project conditions (**Figure 5.15-3b**), the foreground agricultural landscape and roads would remain unchanged. The first aboveground structure of the gen-tie line and the connecting conductors would be visible, but the structures would be substantially obscured by an existing lattice transmission structure. As a result, the gen-tie facilities visible in **Figure 5.15-3b** would not be noticeable to the casual observer on Kilkenny or Willow roads. Farther to the east (approximately 0.9 miles east of KOP 1), some of the taller elements of the substation would be barely discernible to the south (right) of the cluster of tall trees in the left-center of the **Figure 5.15-3b** image. These facilities would also not be noticeable to the casual observer in the vicinity of KOP 1 (including the adjacent portion of I-80).

From KOP 1, given the existing physical landscape (existing physical environment), the proposed project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated weak. The visual absorption capability of the landscape is rated moderate (primarily due to the prominence of

existing high-voltage transmission lines visible from KOP 1). The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated unobtrusive, meaning the proposed project is indistinct or not obvious within the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 1**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project (in this case jurisdictional project components) would have a less-than-significant impact on the environment with respect to the degrading of the existing visual character or quality of the public view of the site and its surroundings (open agricultural fields, rural residential development patterns, and the presence of any industrial development). This conclusion is substantially affected by the prevalence of existing energy infrastructure (transmission lines) in the foreground and the screening of the gen-tie structure it provides, the viewing distance to the main project site, and the vegetative screening of a substantial portion of the project site as viewed from KOP 1 and the immediate vicinity.

KOP 2a – Byrnes Road and Kilkenny Road – Viewing South. KOP 2a is at the intersection of Byrnes Road and Kilkenny Road. From KOP 2a, the project site is approximately 100 feet to the southwest. See **Figure 5.15-4a** – existing conditions of project site from the intersection of Byrnes Road and Kilkenny Road, **Figure 5.15-4b** – existing conditions plus proposed project with vegetative screen at 1 year, and **Figure 5.15-4c** – existing conditions plus proposed project with vegetative screen at 5 years (Note: simulations including vegetative landscape screening reflect the Preliminary Landscape Plan provided here as **Appendix 5.15A**).

The foreground to middleground view to the south from KOP 2a encompasses the asphalt roadway lined with dry grass and a few tan shrubs, a wood-pole utility line, and row-crop agricultural fields beyond. Along the horizon are more utility lines, tall trees, and the distant hills. CEC staff did not identify an “object of aesthetic significance” at or visible from this KOP.

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. As viewed from KOP 2a (see **Figure 5.15-4b**), the approximately 9.5-foot-tall BESS enclosures would be prominently visible in the foreground to middleground. The BESS enclosures would appear as light gray, rectangular structures running horizontally across the midpoint of the landscape. The BESS enclosures would be backdropped by distant rows of trees.

At one year of growth (**Figure 5.15-4b**), the proposed vegetative landscape screening would not be effective in screening the project facilities from Byrnes Road. At five years of growth (**Figure 5.15-4c**), the proposed vegetative landscape screening would screen much of the lower project elements (BESS enclosures) but would not effectively screen taller project components (water storage tank and certain on-site substation components). In the longer term (greater than five years), as the landscape screening

matures in height and fills out, the landscaping would obscure more of the proposed project.

From KOP 2a, given the existing physical landscape, the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated strong. The visual absorption capability of the landscape is rated moderate. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 2a**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project components within the jurisdiction of CEC's Opt-In Certification would have a significant impact on the environment with respect to the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 2a and the immediate vicinity.

KOP 2b – Byrnes Road and Kilkenny Road – Viewing Southwest. KOP 2b is also at the intersection of Byrnes Road and Kilkenny Road (same location as KOP 2a), but the view is to the southwest. See **Figure 5.15-5a** – existing conditions of proposed project site from the intersection of Byrnes Road and Kilkenny Road, **Figure 5.15-5b** – existing conditions plus proposed project with vegetative screen at 1 year, and **Figure 5.15-5c** – existing conditions plus proposed project with vegetative screen at 5 years. This viewpoint is representative of the views of travelers on Byrnes Road and Kilkenny Road and residents on the north side of Kilkenny Road.

The foreground to middleground view to the southwest from KOP 2b encompasses the asphalt roadway lined with dry grass, the open field of the project site backdropped by distant trees, existing high-voltage transmission lines, and the Vaca Mountains. Although CEC staff did not identify an "object of aesthetic significance" at the project site, Solano County's General Plan states that, "…the oak and grass covered hills offer an abundance of scenic vistas," and Vacaville residents value the views of the ridgelines of the Vaca Mountains. However, the views of the Vaca Mountains from the immediate proposed project vicinity are already somewhat compromised by the existing transmission lines that run parallel to I-80 (as shown in **Figure 5.15-5a**).

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. As shown in the visual simulation presented in **Figure 5.15-5b**, the open, agricultural field in the foreground to middleground would be converted to an industrial-appearing facility with complex structural elements; an expansive field of rectangular BESS enclosures; tall, Tubular Steel (gen-tie) Poles; and a visually dominant, 15-foot-tall, rectangular, sound barrier that would run along the northern site perimeter adjacent to Kilkenny Road (all jurisdictional project components). Although the sound barrier would block views of the lower facility components (BESS enclosures and part of the substation) from Kilkenny Road and the

adjacent (to the north) residences, it would not block views of the taller components (some substation components and the gen-tie structures). Also, it would obstruct the open, panoramic views to the south.

At one year of growth (**Figure 5.15-5b**), the proposed vegetative landscape screening would not be effective in screening either the intervening sound barrier wall or the taller project facilities beyond from Kilkenny Road and adjacent residences. At five years of growth (**Figure 5.15-5c**), the proposed vegetative landscape screening would screen approximately the lower half of the sound barrier wall, but the wall would remain a visually dominant feature. In the longer term (greater than five years), as the landscape screening matures in height and fills out, the landscaping would obscure more of the sound barrier wall, though the upper portions of the taller, on-site substation structures and shield poles would likely remain visible.

From KOP 2b, given the existing physical landscape, the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated severe. The visual absorption capability of the landscape is rated low. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated dominant, meaning the proposed project commands or controls the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 2b**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project components within the jurisdiction of CEC's Opt-In Certification would have a significant impact on the environment with respect to the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 2b and the immediate vicinity.

KOP 3 – Byrnes Road – Viewing North. KOP 3 is on northbound Byrnes Road, approximately 650 feet south of the southeast corner of the project site, viewing north-northwest along Byrnes Road and over the project site. See **Figure 5.15-6a** – existing conditions of project site from northbound Byrnes Road and **Figure 5.15-6b** – existing conditions plus proposed project.

The foreground to middleground view to the north-northwest from KOP 3 encompasses the asphalt roadway lined with dry grass and the row-crop agricultural fields beyond backdropped by more distant trees, existing high-voltage transmission lines, Vaca-Dixon Substation, and low hills of the Vaca Mountains. Although CEC staff did not identify an "object of aesthetic significance" at the project site, Solano County's General Plan states that, "...the oak and grass covered hills offer an abundance of scenic vistas," and Vacaville residents value the views of the ridgelines of the Vaca Mountains. However, the views of the distant ridgelines from KOP 3 are already somewhat compromised by the existing transmission lines that run parallel to I-80 and Vaca-Dixon Substation (as

shown in **Figure 5.15-6a**), and the proposed project facilities would not further impair that view of the mountains.

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. As shown in the simulation presented in **Figure 5.15-6b**, the immediate foreground of the asphalt roadway and grass and shrubs would remain unchanged. However, the northern portion of the agricultural field would be converted to an industrial-appearing facility with the complex structural elements of the proposed project substation; an expansive field of rectangular BESS enclosures; tall, tubular steel take-off structures and gen-tie poles; and a rectangular sound barrier that would run along the northern site perimeter adjacent to Kilkenny Road.

From KOP 3, given the existing physical landscape, the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated moderate. The visual absorption capability of the landscape also is rated moderate. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 3**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project components within the jurisdiction of CEC's Opt-In Certification would have a significant impact on the environment with respect to the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 3 and the immediate vicinity.

KOP 4 – North Meridian Road Overpass – Viewing Southwest. KOP 4 is on the North Meridian Road overpass at I-80, viewing southwest down I-80 and capturing a portion of the proposed gen-tie span of I-80 that would be non-jurisdictional project components. From KOP 4, the proposed project gen-tie span of I-80 would be approximately 940 feet to the southwest. See **Figure 5.15-7** – existing conditions of project site from North Meridian Road Overpass. A visual simulation for KOP 4 (existing conditions plus proposed project components) was not prepared for this KOP given the limited visual impact that would occur.

The foreground to middleground view to the southwest from KOP 4 encompasses I-80, adjacent trees and orchards, several high-voltage electric transmission line spans over I-80, all backdropped by the low hills and ridgelines of the Vaca Mountains. Although CEC staff did not identify an "object of aesthetic significance" along the gen-tie route, Solano County's General Plan states that, "...the oak and grass covered hills offer an abundance of scenic vistas," and Vacaville residents value the views of the ridgelines of the Vaca Mountains. However, the views of the distant hills and ridgelines from KOP 4 are already substantially impaired by (a) the existing transmission lines that span I-80 and (b) intervening trees (as shown in **Figure 5.15-7**). The proposed non-jurisdictional

project components (e.g., gen-tie span of I-80) would not substantially impair that view.

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. The foreground to middleground I-80 corridor would remain unchanged except that an additional transmission line (the gen-tie line) span would be added between the two existing transmission line spans visible in **Figure 5.15-7**.

From KOP 4, given the existing physical landscape (specifically, the structural context established by the existing, multiple transmission lines), the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated moderate. The visual absorption capability of the landscape also is rated moderate. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated unobtrusive, meaning the proposed project would be indistinct or not obvious within the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 4**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed non-jurisdictional project components (in this case, the gen-tie span of I-80) would have a less-than-significant impact on the environment with respect to the degrading of the existing visual character or quality of the private and public view of the site and its surroundings when viewed from KOP 4.

KOP 5a – Kilkenny Road – Viewing Southeast. KOP 5a is located approximately 280 feet west of the project site on Kilkenny Road. See **Figure 5.15-8a** – existing conditions of project site from Kilkenny Road, **Figure 5.15-8b** – existing conditions plus proposed project with vegetative screen at 1 year, and **Figure 5.15-8c** – existing conditions plus proposed project with vegetative screen at 5 years. This viewpoint is representative of the views of travelers on Kilkenny Road and residents on the north side of Kilkenny Road.

The foreground to middleground view to the southeast from KOP 5a encompasses the northeast corner of the orchard adjacent to the project site and the open field of the project site, which is substantially screened by the orchard. CEC staff did not identify an "object of aesthetic significance" at or visible from this KOP.

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. As viewed from KOP 5a (see **Figure 5.15-8b**), the upper portions of the substation complex, riser structures, shield poles, and gen-tie structures (all proposed jurisdictional project components) would be prominently visible above the orchard trees. As shown in the 1-Year and 5-Year simulations of vegetative growth (**Figure 5.15-8b** and **Figure 5.15-8c**, respectively) the proposed vegetative landscape screening would not reduce the visual access to the project from the KOP 5a location on Kilkenny Road.

From KOP 5a, given the existing physical landscape, the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated strong. The visual absorption capability of the landscape is rated low to moderate. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated prominent, meaning the proposed project stands out or is striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 5a**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project components within the jurisdiction of CEC's Opt-In Certification would have a significant impact on the environment with respect to the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 5a and the immediate vicinity.

KOP 5b – Kilkenny Road – Viewing East-Southeast. KOP 5b is located at the same location as KOP 5a on Kilkenny Road but the view is shifted to the east-southeast. See **Figure 5.15-9a** – existing conditions of project site from Kilkenny Road, **Figure 5.15-9b** – existing conditions plus proposed project with vegetative screen at 1 year, and **Figure 5.15-9c** – existing conditions plus proposed project with vegetative screen at 5 years. This viewpoint is representative of the views of travelers on Kilkenny Road and residents on the north side of Kilkenny Road.

The foreground to middleground view to the east-southeast from KOP 5b encompasses the northeast corner of the orchard adjacent to the project site and the open field of the project site, which is substantially screened by the orchard. CEC staff did not identify an "object of aesthetic significance" at or visible from this KOP.

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. As viewed from KOP 5b (see **Figure 5.15-9b**), the upper portions of the substation complex, riser structures, shield poles, and gen-tie-related structures would be prominently visible above the orchard trees. In addition, the western portion of the visually dominant, rectangular, sound barrier (also a proposed jurisdictional project component) that would run along the northern site perimeter adjacent to Kilkenny Road would also be prominently visible from KOP 5b. As shown in the 1-Year and 5-Year simulations of vegetative growth (**Figure 5.15-9b** and **Figure 5.15-9c**, respectively) the proposed vegetative landscape screening would not reduce the visual access to the project from the KOP 5b location on Kilkenny Road nor would it substantially screen the sound barrier wall, which would partially obstruct the more distant, open views to the east-southeast from KOP 5b.

From KOP 5b, given the existing physical landscape, the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated severe. The visual absorption capability of the landscape is rated low to moderate. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated dominant, meaning the proposed project would

command or control the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 5b**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project components within the jurisdiction of CEC's Opt-In Certification would have a significant impact on the environment with respect to the degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 5b and the immediate vicinity.

KOP 5c – Kilkenny Road – Viewing North. KOP 5c is located approximately 0.3 miles farther west from KOPs 5a/5b on Kilkenny Road, just east of where the underground portion of the gen-tie line would transition to the aboveground segment of the gen-tie line (would be within the jurisdiction of CEC's Opt-In Certification). The view from KOP 5c is to the north. See **Figure 5.15-10a** – existing conditions of proposed gen-tie from Kilkenny Road and **Figure 5.15-10b** – existing conditions plus proposed project.

The foreground to middleground view to the north from KOP 5c encompasses an existing orchard north of, and adjacent to, Kilkenny Road. A multiple transmission line corridor passes through the orchard on a north-south path and is substantially screened by the intervening orchard trees. CEC staff did not identify an "object of aesthetic significance" at or visible from this KOP.

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. As viewed from KOP 5c (see **Figure 5.15-10b**), the cleared right of way through the orchard would be widened to accommodate the proposed project gen-tie and communication poles. As a result, the existing transmission facilities would become fully exposed to views from Kilkenny Road along with the project's gen-tie facilities as they pass north and then span I-80 (behind the trees in the center of the image). The complex of structural components comprising the Vaca-Dixon Substation would also become noticeably visible just beyond the tree line as well.

From KOP 5c, given the existing physical landscape, the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated strong. The visual absorption capability of the landscape is rated low to moderate. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated prominent, meaning the proposed project would stand out or be striking in the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 5c**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the jurisdictional above-ground gen-tie components would have a significant impact on the environment with respect to the

degrading of the existing visual character or quality of the public view of the site and its surroundings when viewed from KOP 5c and the immediate vicinity.

KOP 6 – Sacramento Valley National Cemetery – Viewing Southwest. KOP 6 is located near the southwestern corner of the Sacramento Valley National Cemetery, viewing southwest. From KOP 6, the viewing distance to the proposed project would range from approximately 1.75 miles (to the project site) to approximately 2 miles (to the proposed gen-tie line). See **Figure 5.15-11a** – existing conditions of project site from the Sacramento Valley National Cemetery, **Figure 5.15-11b** – existing conditions plus proposed project, and **Figure 5.15-11c** – existing conditions plus proposed project with indicators.

The foreground to middleground view to the southwest from KOP 6 encompasses agricultural lands dedicated to row crops and orchards, several high-voltage electric transmission lines in the distance, all backdropped by the Vaca Mountains. Although CEC staff did not identify an "object of aesthetic significance" along the gen-tie route, Solano County's General Plan states that, "...the oak and grass covered hills offer an abundance of scenic vistas," and Vacaville residents value the views of the ridgelines of the Vaca Mountains. However, the views of the distant hills and ridgelines from KOP 6 would not be noticeably impaired when viewed by the casual observer at KOP 6 (as shown in **Figures 5.15-11b** and **11c**).

CEC staff conducted an evaluation of the physical change to the existing physical environment by the proposed project. As shown in the simulations presented in **Figures 5.15-11b** and **11c**, the foreground to middleground landscape would not be noticeably altered.

From KOP 6, given the existing physical landscape, the project prominence (basic design element contrast, scale dominance, spatial dominance) in the existing physical landscape is rated negligible. The visual absorption capability of the landscape is rated high. The magnitude of change (dominant, prominent, conspicuous, apparent, unobtrusive) in the landscape is rated unobtrusive, meaning the proposed project would be indistinct or not obvious within the view in the landscape. See the **Key Observation Point Evaluation Worksheet - Key Observation Point No. 6**.

For the purpose of the CEQA Guidelines, and as set forth in Table 15 in the worksheet, this combination of ratings yields a conclusion that the proposed project components (jurisdictional and non-jurisdictional) would have a less-than-significant impact on the environment with respect to the degrading of the existing visual character or quality of the private and public view of the site and its surroundings when viewed from KOP 6 and the immediate vicinity.

Urbanized Area Analysis

With regard to the Urbanized Area policy consistency analysis, CEC staff has concluded that with effective implementation of COCs **VIS-1** (Structural Surface Treatments), **VIS-2** (Vegetative Landscape Screening Plan), and **VIS-3** (Outdoor Lighting Control

and Management), the proposed project components within jurisdiction of CEC's Opt-In Certification would be consistent with all nine of the applicable (to the project) state and local regulations/policies pertaining to the preservation of scenic quality.

The non-jurisdictional project components would also be consistent with the applicable state and local regulations/policies pertaining to the preservation of scenic quality. And although the resulting visual impacts from those proposed project components would be less than significant, mitigation measures (MMs) **MM VIS-1** (Structural Surface Treatments) and **MM VIS-2** (Outdoor Lighting Control and Management) should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations, title 14, section 15091(a)(2).

Figure 5.15-1 Scenic Resources

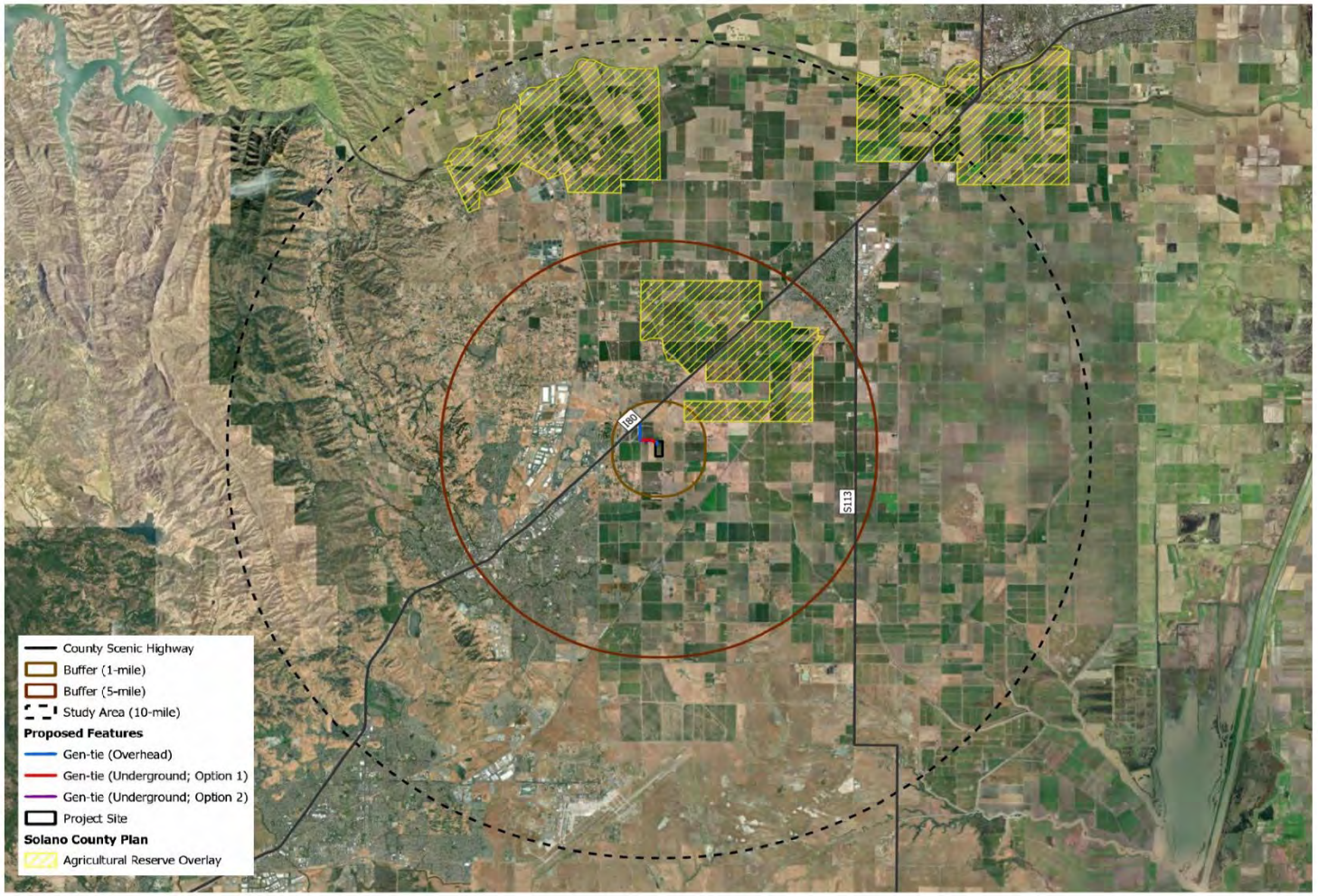


Figure 5.15-1
Scenic Resources

Sources: TN 259884, Figure 3-14

Figure 5.15-2 Key Observation Points

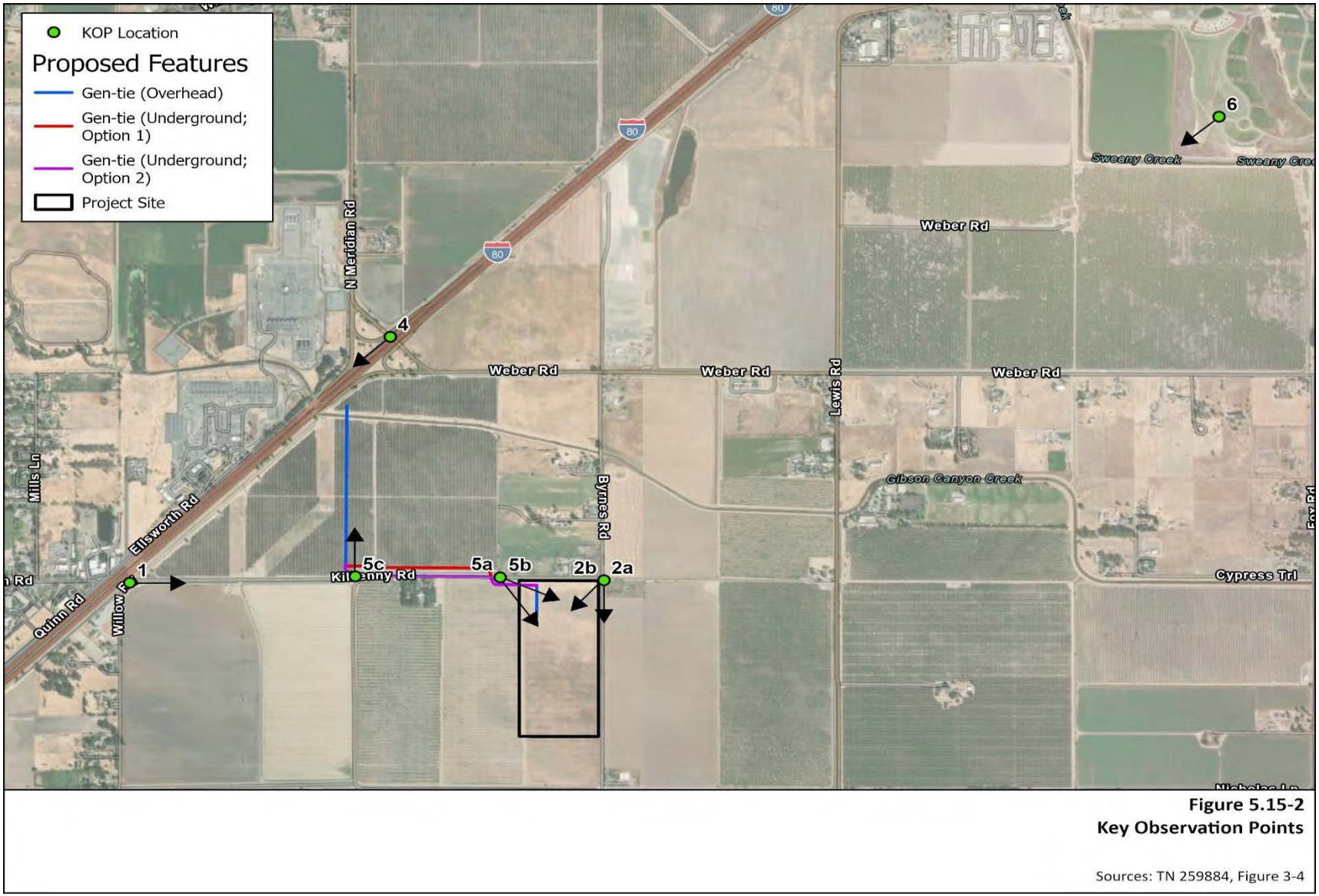


Figure 5.15-3a KOP 1 – Existing Conditions of Project Site from Kilkenny Road adjacent to I-80 (Viewing East)

Figure 5.15-3a
KOP 1 - Existing Conditions of Project Site from Kilkenny Road adjacent to I-80 (Viewing East)

Source: TT 2025a, Figure 3.1-1

Figure 5.15-3b KOP 1 – Simulation Conditions of Proposed Project from Kilkenny Road adjacent to I-80 (Viewing East)

Figure 5.15-3b
KOP 1-Simulation Conditions of Proposed Project from Kilkenny Road adjacent to I-80 (Viewing East)

Source: TT 2025a, Figure 3.1-1

Figure 5.15-4a KOP 2a – Existing Conditions of Project Site from Intersection of Byrnes Road and Kilkenny Road (Viewing South)

Figure 5.15-4a
KOP 2a - Existing Conditions of Project Site from Intersection of Byrnes Road and Kilkenny Road (Viewing South)

Source: TT 2026e, Figure 3.1-2

Figure 5.15-4b KOP 2a – Simulation Conditions with Landscaping After 1 year, from Intersection of Byrnes Road and Kilkenny Road (Viewing South)

Figure 5.15-4b
KOP 2a - Simulation Conditions with Landscaping After 1 year, from Intersection of Byrnes Road and Kilkenny Road (Viewing South)

Source: TT 2026e, Figure 3.1-2

Figure 5.15-4c KOP 2a – Simulation Conditions with Landscaping After 5 years, from Intersection of Byrnes Road and Kilkenny Road (Viewing South)

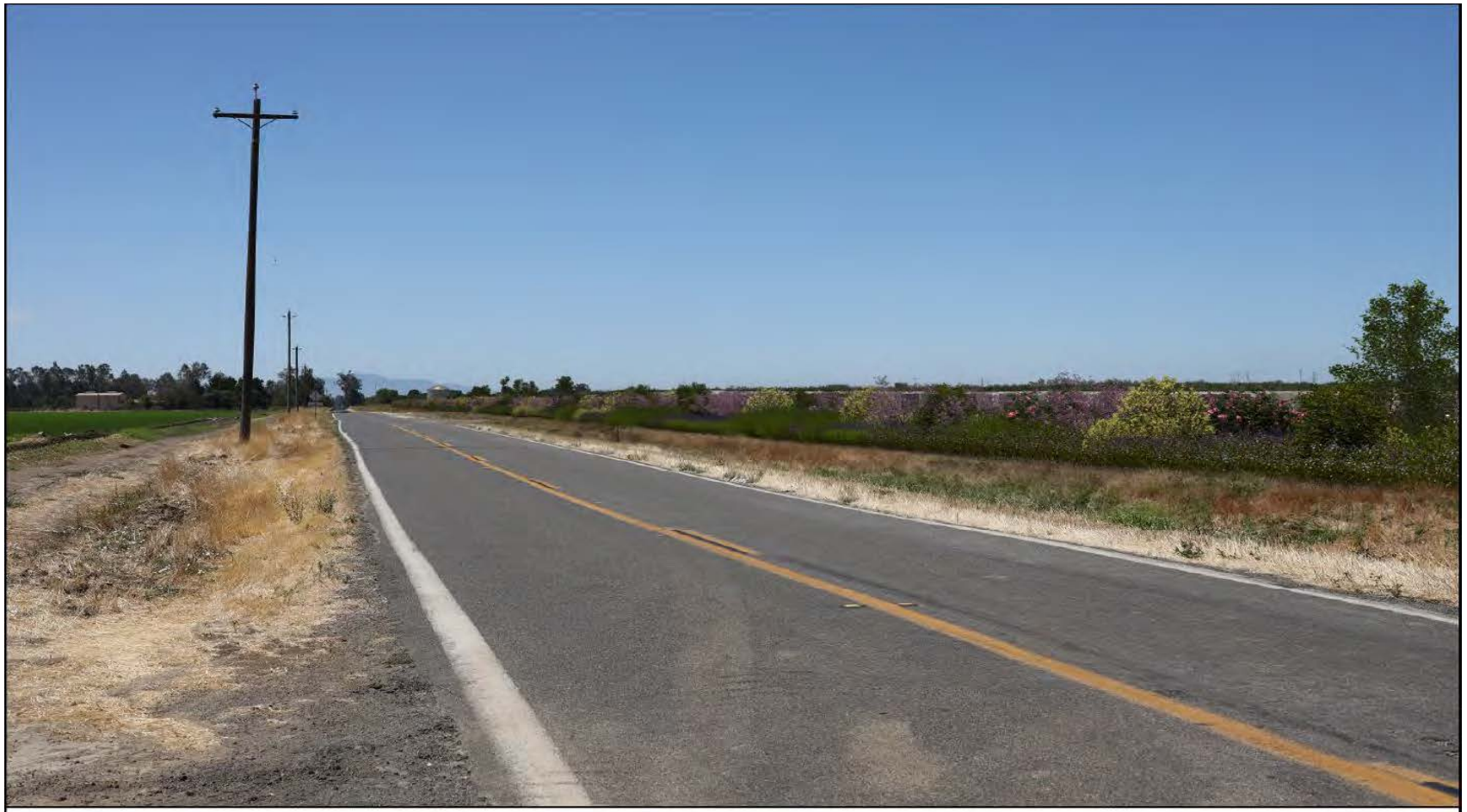


Figure 5.15-4c
KOP 2a - Simulation Conditions with Landscaping After 5 years, from Intersection of Byrnes Road and Kilkenny Road (Viewing South)

Source: TT 2026e, Figure 3.1-7

Figure 5.15-5a KOP 2b – Existing Conditions of Project Site from Intersection of Byrnes Road and Kilkenny Road (Viewing Southwest)

Figure 5.15-5a
KOP 2b - Existing Conditions of Project Site from Intersection of Byrnes Road and Kilkenny Road (Viewing Southwest)

Source: TT 2026h, Figure 3.1-3

Figure 5.15-5b KOP 2b – Simulation Conditions with Landscaping After 1 year, from Intersection of Byrnes Road and Kilkenny Road (Viewing Southwest)

Figure 5.15-5b
KOP 2b - Simulation Conditions with Landscaping After 1 year, from Intersection of Byrnes Road and Kilkenny Road (Viewing Southwest)

Source: TT 2026h, Figure 3.1-3

Figure 5.15-5c KOP 2b – Simulation Conditions with Landscaping after 5 years, from Intersection of Byrnes Road and Kilkenny Road (Viewing Southwest)

Figure 5.15-5c
KOP 2b - Simulation Conditions with Landscaping After 5 years, from Intersection of Byrnes Road and Kilkenny Road (Viewing Southwest)

Source: TT 2026h, Figure 3.1-8

Figure 5.15-6a KOP 3 – Existing Conditions of Project Site from Byrnes Road (Viewing North)

Figure 5.15-6a
KOP 3 - Existing Conditions of Project Site from Byrnes Road (Viewing North)

Source: TT 2026h, Figure 3.1-4

Figure 5.15-6b KOP 3 – Simulation Conditions from Byrnes Road (Viewing North)

Figure 5.15-6b
KOP 3- Simulation Conditions from Byrnes Road (Viewing North)

Source: TT 2026h, Figure 3.1-4

Figure 5.15-7 KOP 4 – Existing Conditions of Gen-tie Span of I-80 from North Meridian Road Overpass (Viewing Southwest)

Figure 5.15-7
KOP 4 Existing Conditions of Gen-tie Span of I-80 from North Meridian Overpass (Viewing Southwest)

Sources: TN 259884, Figure 3-7

Figure 5.15-8a KOP 5a – Existing Conditions of Project Site from Kilkenny Road (Viewing Southeast)

Figure 5.15-8a
KOP 5a - Existing Conditions of Project Site from Kilkenny Riad (Viewing Southeast)

Source: TT 2026h, Figure 3.1-11

Figure 5.15-8b KOP 5a – Simulation Conditions with Landscaping After 1 year, from Kilkenny Road (Viewing Southeast)

Figure 5.15-8b
KOP 5a- Simulation Conditions with Landscaping
After 1 year, from Kilkenny Road (Viewing Southeast)

Source: TT 2026h, Figure 3.1-11

Figure 5.15-8c KOP 5a – Simulation Conditions with Landscaping After 5 years, from Kilkenny Road (Viewing Southeast)

Figure 5.15-8c
KOP 5a- Simulation Conditions with Landscaping
After 5 years, from Kilkenny Road (Viewing Southeast)

Source: TT 2026h, Figure 3.1-12

Figure 5.15-9a KOP 5b – Existing Conditions of Project Site from Kilkenny Road (Viewing East-Southeast)

Figure 5.15-9a
KOP 5b - Existing Conditions of Project Site Plus Proposed Project and Vegetative Screen at 5 years, from Kilkenny Road (Viewing East-Southeast)

Source: TT 2026e, Figure 3.1-9

Figure 5.15-9b KOP 5b – Existing Conditions of Project Site Plus Proposed Project and Vegetative Screen at 1 year, from Kilkenny Road (Viewing East-Southeast)

Figure 5.15-9b
KOP 5b - Existing Conditions of Project Site Plus Proposed Project and Vegetative Screen at 1 year, from Kilkenny Road (Viewing East-Southeast)

Source: TT 2026e, Figure 3.1-9

Figure 5.15-9c KOP 5b – Existing Conditions of Project Site Plus Proposed Project and Vegetative Screen at 5 years, from Kilkenny Road (Viewing East-Southeast)

Figure 5.15-9c
KOP 5b - Existing Conditions of Project Site Plus Proposed Project and Vegetative Screen at 5 years, from Kilkenny Road (Viewing East-Southeast)

Source: TT 2026e, Figure 3.1-10

Figure 5.15-10a KOP 5c – Existing Conditions of Gen-tie Route from Kilkenny Road (Viewing North)

Figure 5.15-10a
KOP 5c Existing Conditions of Gen-tie Route from Kilkenny Road (Viewing North)

Sources: TT 2025b, Figure 7-2

Figure 5.15-10b KOP 5c – Existing Conditions of Gen-tie Route Plus Proposed Gen-tie, from Kilkenny Road (Viewing North)

Figure 5.15-10b
KOP 5c - Existing Conditions of Gen-tie Route Plus Proposed Gen-tie, from Kilkenny Road (Viewing North)

Sources: TT 2025b, Figure 7-2

Figure 5.15-11a KOP 6 – Existing Conditions of Project Site and Gen-tie Route from Sacramento Valley National Cemetery (Viewing Southwest)

Figure 5.15-11a
KOP 6 - Existing Conditions of Project Site and Gen-tie Route from Sacramento Valley National Cemetery (Viewing Southwest)

Source: TT 2025a, Figure 3.1-5

Figure 5.15-11b KOP 6 – Existing Conditions of Project Site Plus Proposed Gen-tie from Sacramento Valley National Cemetery (Viewing Southwest)

Figure 5.15-11b
KOP 6 - Existing Conditions of Project Site Plus Proposed Gen-tie from Sacramento Valley National Cemetery (Viewing Southwest)

Source: TT 2025a, Figure 3.1-5

Figure 5.15-11c KOP 6 – Existing Conditions of Project Site Plus Proposed Gen-tie With Indicators from Sacramento Valley National Cemetery (Viewing Southwest)

Figure 5.15-11c
KOP 6 Existing Conditions of Project Site Plus Proposed Gen-tie With Indicators from Sacramento Valley National Cemetery (Viewing Southwest)

Sources: TN 262554, Figure 3.1-6

Light and Glare

d. Would the project "create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?"

There is currently no lighting at the project site, and as previously noted, the landscape immediately surrounding the project site is primarily agricultural with few, scattered rural residences. Therefore, nighttime lighting in the immediate area is limited, consisting mainly of light from windows of residential and agricultural structures and intermittent/temporary lighting (headlights) from vehicles on the adjacent and nearby local roads. Glare sources in the proposed project vicinity are associated with flat building surfaces, which include glass and reflective metal surfaces.

Construction of the proposed project would generally occur during daytime hours. However, at limited times, some construction activities may be required at night while electrical demand is low, and these activities would require lighting for safety. Temporary, portable lighting would be used to illuminate work areas if nighttime construction activities are required. The laydown yard may also be lit for security during construction.

Permanent, operational lighting would only be in areas where it is required for safety, security, or operations. Low-elevation (i.e., less than 14-foot), controlled security lighting would be installed at primary access gates and the on-site substation (jurisdictional project components). The lighting would only switch on when personnel enter the area (through either motion sensor or manual activation [i.e., switch]) and would be designed to provide the minimum illumination needed. All lighting would be directed on site and would include shielding as necessary to direct light downward and to minimize illumination of the night sky or potential impacts to surrounding viewers (light trespass into adjacent areas). However, given the relatively sparse development in the surrounding area and the general lack of stationary nighttime lighting, the introduction of nighttime task lighting would constitute a potentially significant impact, absent implementation of the lighting COC **VIS-3** described below. Further, all lighting associated with the proposed project would comply with Solano County requirements. These lighting requirements would be incorporated into an Outdoor Lighting Control and Management Plan as required by COC **VIS-3** (for jurisdictional project components) and **MM VIS-2** (for non-jurisdictional project components such as changes at Vaca-Dixon Substation).

It is not anticipated that any new structure lighting would be installed as part of the proposed gen-tie line, except for Federal Aviation Administration (FAA) hazard lighting that may be required for some structures. FAA hazard lighting, if required, would likely consist of either red flashing lights; medium-intensity, white, flashing lights; high-intensity, white, flashing lights; or dual lighting consisting of red lights for nighttime and medium-intensity, white lights for daytime.

Additionally, with the application of anti-reflective coatings as required by COC **VIS-1** (for jurisdictional project components) and **MM VIS-1** (for non-jurisdictional project components), the proposed project would display overall low reflectivity.

Therefore, light, glare, and reflectance emitted from the proposed project were assessed to determine if each would create an adverse effect to the existing physical environment off site and skyward (light pollution and reflectance).

Light Pollution

"Light pollution is the human-made alteration of outdoor light levels from those occurring naturally." (DarkSky 2024) Light pollution "occurs when outdoor lighting is misdirected, misplaced, unshielded, excessive or unnecessary. As a result, light spills unnecessarily upward and outward, causing glare, light trespass, and a nighttime urban 'sky glow' overhead, indicating wasted energy and obscuring the stars overhead," and clutter.[17] (Dark Sky Society 2024)

DarkSky International (formerly the International Dark-Sky Association) is a recognized worldwide authority in combating light pollution. To minimize the harmful effects of light pollution, DarkSky International recommends that lighting should only be on when needed; only light the area that needs it; be no brighter than necessary; minimize blue light emissions;[18] and be fully shielded.[19]

The DarkSky International "DarkSky Approved" program provides an objective, third-party certification for lighting-related products that minimize glare, reduce light trespass, and preserve the natural night sky.[20] Outdoor luminaires certified by the program incorporate features such as shielding, no uplight allowance (BUG Rating U0[21]), dimming capabilities to one percent of their full rating, and emission control that limits visible light in the 380 to 520 nanometers (nm)[22] range to no more than seven

17 Clutter is the bright, confusing, and excessive grouping of light sources.
18 Studies show exposure to blue light can cause eye strain, fatigue, headaches, and sleeplessness.
19 "Fully shielded**"** means a luminaire constructed in a manner that all light emitted from the fixture, either directly from the lamp or a defusing element, or indirectly by reflection or refraction from any part of the luminaire is projected below the horizontal plane, as determined by a photometric test or certified by the manufacturer.
20 To see a list of DarkSky Approved products, manufacturers, and retailers visit the DarkSky International website <www.darksky.org>.
21 "A BUG Rating stands for backlight, uplight, and glare. Backlight (B) is the light directed behind the fixture, uplight (U) is any light directed upward above the horizontal plane of the luminaire, and glare (G) is the amount of light emitted from the luminaire at high angles. The backlight, uplight, and glare ratings are assigned a value between 0 and 5 (with lower on the scale being more desirable) depending on the maximum amount of light in these zones based on thresholds defined by the Illuminating Engineering Society (IES) and enforced by the International Dark-Sky Association (IDA)" [now named DarkSky International].
22 The human eye can view the segment of the electromagnetic radiation spectrum wavelengths between 380 to 700 nanometers. This segment is known as "visible light."

percent.[23] The proposed project would be required to be consistent with DarkSky principles.

Safety and Security Lighting

A project requires outdoor luminaires to support safety and security activities. Safety and security lighting provides a foundational deterrent to intrusion by increasing nighttime visibility and supporting the effectiveness of security cameras.

"Each organization should ensure a minimum level of light for their respective property areas that complies with all applicable regulations and industry guidelines. Security lighting requirements should be specified by a lighting engineer. Ideally, lighting requirements would be identified as part of a security survey. The lighting program should consider the following:

- Lighting should not illuminate security/protection officers or patrols. Where security patrols cannot be kept out of the zones of illumination, a judgment must be made between the advantages of the lighting and the reduction in patrol effectiveness.
- Lighting must be combined with surveillance. The deterrent effect of lighting depends on the fear of detection. This may also require video surveillance or security/protection officers on static posts and mobile patrols.
- Lighting must not cause nuisances or hazards to neighbors, such as light pollution or light trespass. Lighting may adversely affect adjoining or adjacent properties such as residential properties, roadways, airports, harbors, neighboring commercial buildings, or properties.
- Lighting must be cost-effective and compatible with site conditions. It may not be economical to illuminate very large areas. Take into account both the existing lighting outside the perimeter and the lighting installed within the site for operational or safety purposes." (Fenelly and Perry, 2017)

Reflectance

Reflectance is the proportion of perpendicular incident light reflected from the surface or body of a material. All surfaces reflect light. Light reflects off the surface in a very predictable manner.

"Reflectivity is defined as the property of a material to reflect the light or radiation. It is a measurement of reflectance irrespective of the thickness of a material." (Electrical4U, 2020).

Exterior surface coatings and materials that diffuse illumination or collection, reflectance, and scattering are of utmost importance. "An ideal coating is non-specular (to decrease geometrical effects) durable, high in reflectance and spectrally flat over a wide wavelength range to give a flat spectral response in input or output." (Labsphere,

23 The human eye can view the segment of the electromagnetic radiation spectrum wavelengths between 380 to 700 nanometers. This segment is known as "visible light."

Inc., 2024) Materials with a non-shiny, textured or matte/powder finish are preferable to glossy or shiny finishes. A few examples of materials and surface treatments that should be avoided if possible: any material with a reflectance greater than 35 percent; any shiny, highly reflective materials even for small surfaces; large smooth surfaces; and large expanses of glass.

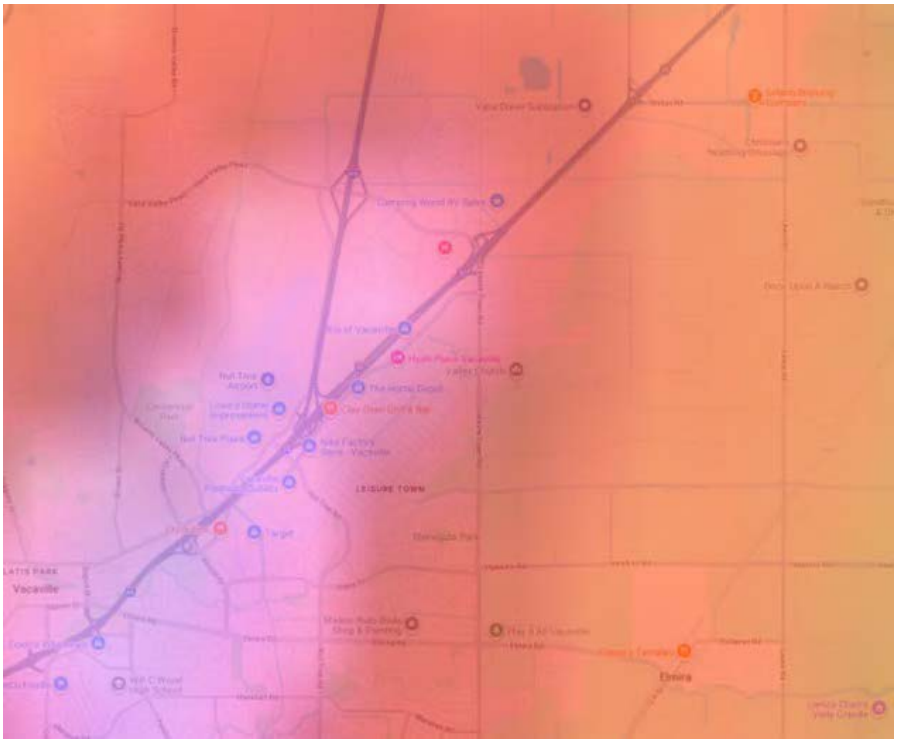
Construction and Operation of Permanent Facility

Less Than Significant with Mitigation/Conditions of Certification Incorporated. As previously noted, there is no lighting at the project site, and the landscape immediately surrounding the project site is primarily agricultural with few, scattered rural residences. Therefore, nighttime lighting in the immediate area is limited, consisting mainly of light from windows of residential and agricultural structures and intermittent/temporary lighting (headlights) from vehicles on the adjacent and nearby local roads. Also, given the lack of development (structures), there are few surfaces that create noticeable glare or high reflectance.

CEC staff reviewed the "World Atlas Night Sky Brightness" interactive map given the location of the proposed project. The map delineates physical radiance (brightness) homogeneously over an area from a relative location by color levels (a light pollution map).[24] See **Figure 5.15-12**. The map also incorporates the Bortle Dark-Sky Scale, a nine-level system that evaluates night-sky brightness as perceived by the naked eye based on the extent of light pollution and the visibility of celestial objects. The scale ranges from Class 1 (the darkest, least light-polluted skies) to Class 9 (the brightest, most light-polluted skies). It shows brightness in the general area to be relatively moderate and transitional between C4 Rural/Suburban Transition and C7 Suburban/urban transition on the Bortle Scale.

24 The "World Atlas Night Sky Brightness" is an interactive map which delineates physical radiance homogeneously over an area from a relative location by color levels provided on The Dark Sky Map: Best Locations for Stargazing website <https://www.darkskymap.com/nightSkyBrightness>. (Dark Sky Map 2025)

Figure 5.15-12 Night Sky Brightness



Visual Resources Figure 5.15-12
Night Sky Brightness

The map shows night sky brightness emitted in the proposed project and surrounding area, which is rated transitional between C4 Rural/Suburban Transition and C7 Suburban/Urban Transition on the Bortle scale. The pink area in the lower left around Vacaville and the adjacent I-80 corridor is rated C8 City Sky (brighter). Source: "World Atlas Night Sky Brightness," Dark Sky Map: Best Locations for Stargazing, https://www.darkskymap.com/nightSkyBrightness, accessed on November 28, 2025.

A preliminary outdoor lighting control and management plan and accompanying luminaire specification sheets for the proposed substation area are provided as **Appendix 5.15B**, Preliminary Substation Lighting Plan. As proposed, approximately 15 permanent LED light fixtures, consisting of three different luminaire types, would be installed in the substation area at heights ranging from 8 feet to 30 feet. A more complete Outdoor Lighting Control and Management Plan would be required for the whole project facility (substation, BESS area, laydown area, access roads, etc. – all jurisdictional project components) as required by COC **VIS-3**. To the extent that additional night lighting is required for non-jurisdictional project components at Vaca-Dixon Substation (e.g., the new Corby Bay), it would not be noticeable to the casual viewer given the existing night lighting context established by the existing facility. However, **MM VIS-2** would maintain the potential nighttime lighting impacts at a less-than-significant level and should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations, title 14, section 15091(a)(2).

The Solano County General Plan contains several policies RS.P-36, RS.I-20, and RS.I-22 that address the reduction of glare and light pollution and the preservation of views of the night sky. It is anticipated that with full implementation of COCs **VIS-1** (Surface Treatments), **VIS-2** (Vegetative Landscape Screening), and **VIS-3** (Outdoor Lighting Control and Management) for jurisdictional project components and **MM VIS-1** and **MM VIS-2** for non-jurisdictional project components, the proposed project would be

consistent with all of the policies relating to the control and management of glare and light pollution.

The finishes of materials proposed to be used as exterior surfaces include dulled, metallic components that are coated with surface treatments that would be predominantly flat and non-reflective to minimize the potential for glare. Further information on the materials proposed to be used for the exterior project components is listed in **Table 5.15-1** above.

Conclusion

Although construction night lighting is expected to be infrequent and short-term, any new artificial light spilling off the project site and the construction laydown area(s) in the existing physical environment during night-time has the potential to create light trespass that would be a potentially significant effect on the environment before mitigation.

The Opt-In application contains statements demonstrating the intent to implement shielding, directional light, non-reflectance materials, and other light pollution and reflectance facility design measures. Shielding is a key element in night-sky-friendly lighting. Fully shielded fixtures, also known as "full-cutoff" fixtures are the gold standard. No light escapes upward or outward, and a passerby is not blinded by the glare from an exposed bulb. The applicant has also supplied renderings of the facility that show a majority of the components would have a light or dark grey color, which is intended to minimize glare.

CEC staff concludes that the level of new light, glare, and reflectance emitted by the proposed project and from the construction laydown area(s) in the existing landscape would have a less-than-significant impact on the environment with effective implementation of the CEC staff-proposed COCs shown under 5.15.5 Proposed Conditions of Certification (see COCs **VIS-1, VIS-2**, and **VIS-3** – for jurisdictional project components) and with effective implementation of MMs shown under 5.15.6 Recommended Mitigation Measures (see **MMs VIS-1** and **VIS-2** – for non-jurisdictional project components).

5.15.2.3 Cumulative Impacts

Cumulative impacts must be discussed if the incremental effect of the proposed project, combined with the effects of other projects is “cumulatively considerable.” (Cal. Code Regs., tit., 14 § 15130[a])

In accordance with CEQA Guidelines, section 15130(b), “… the discussion of cumulative impacts shall reflect the severity of the impacts and their likelihood of occurrence, but the discussion need not provide as great detail as is provided for the effects attributable to the proposed project alone. The discussion should be guided by standards of practicality and reasonableness and should focus on the cumulative impact to which the

identified other projects contribute rather than the attributes of other projects which do not contribute to the cumulative impact." (Cal. Code Regs., tit. 14, § 15130[b].)

"Where a lead agency is examining a project with an incremental effect that is not 'cumulatively considerable,' a lead agency need not consider that effect significant but shall briefly describe its basis for concluding that the incremental effect is not cumulatively considerable." (Cal. Code Regs., tit. 14, § 15130[a].)

Appendix A, Table A-1 Cumulative Projects List, provides a descriptive listing of 156 cumulative projects within the cumulative study area. Of those projects, only the Vaca-Dixon Power Center Project (Project #2 in the list) would be located sufficiently close to the proposed project and would have construction characteristics similar to the proposed project. Project #2 is approximately 0.65 mile west of the proposed main BESS facility on Kilkenny Road (see **Appendix A, Corby BESS Cumulative Map**). The Vaca-Dixon project's proximity to the proposed project and its similar construction characteristics are such that the incremental effects of construction activities attributable to the proposed project could become cumulatively considerable if construction activities at the cumulative project site were to occur at the same time, or right before or after construction of the proposed project. Construction activities including the use, storage, and movement of equipment and materials, as well as night lighting on or from the cumulative project site may combine with activities, equipment operation, and night lighting on the proposed project site. The construction activities may lead to continued presence of construction activity and light emissions in the immediate area for several years. Therefore, for the purpose of the CEQA Guidelines, CEC staff concludes for "Aesthetics" that given the scales of the proposed project and the cumulative project, the proposed project would have a cumulatively considerable effect on the environment during construction, even with implementation of COCs **VIS-1** through **VIS-3** and **MMs VIS-1** and **VIS-2**.

Similarly, with respect to proposed project operation, only the Vaca-Dixon Power Center Project would be close enough and exhibit sufficiently similar structure characteristics to potentially contribute to a cumulatively considerable impact with the proposed project. Like the proposed project, the Vaca-Dixon project would also be an energy storage project and would exhibit visual characteristics similar to the proposed project and would be partially visible within the same field of view as the proposed project when traveling on Kilkenny Road. Therefore, daytime visibility of the two projects could result in cumulatively considerable aesthetics effects including the perception of the increased industrialization of the landscape along this portion of Kilkenny Road, even with implementation of COCs **VIS-1** and **VIS-2**.

The collective night lighting from these two projects does have the potential to result in a cumulatively considerable night lighting impact for both construction and operation. However, CEC staff concludes that with implementation of COCs **VIS-1** and **VIS-3**, the proposed project's contribution to incremental night lighting effects would not be cumulatively considerable. Therefore, for the purpose of the CEQA Guidelines, CEC staff

concludes for "Aesthetics" that the proposed project would not result in a cumulatively considerable effect on the environment during construction and operation.

5.15.3 Project Conformance with Applicable LORS

Table 5.15-2 below provides CEC staff's determination of project consistency with laws, ordinances, regulations, and standards (LORS) governing scenic quality including any proposed COC or MM, where applicable, to achieve consistency.

TABLE 5.15-2 PROJECT CONSISTENCY WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable LORS	Consistency and Basis For Determination
State	
California Scenic Highway Program. Section 263 of the Streets and Highways Code, the "State Scenic Highway System List" provides a list of highways that have been either officially designated or are eligible for designation as a state scenic highway.	**Yes.** The "State Scenic Highway System List" shows the project site is not along a designated state scenic highway. The nearest officially designated state scenic highway is SR-128, approximately 9.2 miles northwest of the project site (Caltrans 2025).
Local	
Solano County General Plan Chapter 4 Resources	
Scenic Resource Policies	
• **Policy RS.P-35:** Protect the unique scenic features of Solano County, particularly hills, ridgelines, wetlands, and water bodies.	**Yes.** There are no hills, ridgelines, wetlands, or water bodies within the project site or along the proposed gen-tie route.
• **Policy RS.P-36:** Support and encourage practices that reduce light pollution and preserve views of the night sky.	**Yes.** Proposed project lighting would be designed to provide the minimum illumination needed to achieve safety and security and would be downward-facing and shielded to focus illumination in the immediate area. All lighting associated with the proposed project would comply with Solano County requirements. Additionally, implementation of COCs **VIS-1, VIS-2**, and **VIS-3** (for jurisdictional project components and **MMs VIS-1** and **VIS-2** (for non-jurisdictional project components) would maintain the potential nighttime lighting impacts at a less-than-significant level. Applies to the operational phase of the project.
• **Policy RS.P-37:** Protect the visual character of designated scenic roadways.	**Yes.** While there are no officially designated or eligible state scenic highways near the project site, I-80 (approximately 0.6 miles to the northwest of the project site) is a County-designated scenic roadway, which is proposed to be spanned by the proposed gen-tie line (the last approximately 0.2 miles of the gen-tie line, including the span of I-80, is a proposed non-jurisdictional project component). Although the span would be visible to travelers on I-80, it would not be noticeable as it would be placed between two existing transmission line spans that connect to the Vaca-Dixon Substation (adjacent to I-80). Although the resulting visual impact of the span would be less than significant, **MM VIS-1**

TABLE 5.15-2 PROJECT CONSISTENCY WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable LORS	Consistency and Basis For Determination
	should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations, title 14, section 15001(a)(2). The main project site (jurisdictional project components) would not be visible or noticeable to travelers on I-80 given the existing screening provided by surrounding orchards, trees, and residential and agricultural structures in the surrounding area. SR 113 is also a County-designated scenic roadway in the vicinity of the proposed project. However, at approximately 5 miles to the east and with a north-south orientation, the proposed project would not be visible to travelers on SR 113.
Implementation Programs Regulations	
RS.I-20: Amend the Zoning Ordinance to: • Include the area, policies, and programs of the Tri-City and County Cooperative Plan for Agriculture and Open Space Preservation.	**Yes.** Due to screening provided by orchards, trees, and residential and agricultural structures in the surrounding area, the proposed BESS enclosures (within the jurisdiction of CEC's Opt-In Certification) would not be noticeable (if visible at all) from the nearest greenbelt (Vaca-Dixon), which is approximately 1.7 miles northeast of the project site. Further, the proposed gen-tie line and span of I-80 (which would be non-jurisdictional project components), would not be a noticeable feature to the casual viewer in the greenbelt area due to the viewing distance and the established structural landscape context (Vaca-Dixon Substation and numerous intervening utility and high-voltage transmission lines connecting to Vaca-Dixon Substation.
• Direct the use of lighting fixtures that reduce glare and light pollution. The ordinance should provide standards for the type and location of lighting fixtures in development projects.	**Yes.** Proposed project lighting would be designed to provide the minimum illumination needed to achieve safety and security and would be downward-facing and shielded to focus illumination in the immediate area. All lighting associated with the proposed project would comply with Solano County requirements. Additionally, implementation of COCs **VIS-1, VIS-2**, and **VIS-3** would maintain the potential nighttime lighting impacts at a less-than-significant level. Applies to the operational phase of project jurisdictional project components. Furthermore, any additional lighting needed for non-jurisdictional project components at Vaca-Dixon Substation (e.g., the new Corby Bay) would not be noticeable to the casual viewer at nighttime given

TABLE 5.15-2 PROJECT CONSISTENCY WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable LORS	Consistency and Basis For Determination
	the existing night lighting context established by the existing facility. However, **MMs VIS-1** and **VIS-2** would maintain the potential nighttime lighting impacts at a less-than-significant level and should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations, title 14, section 15091(a)(2).
RS.I-21: Preserve the visual character of scenic roadways as shown in Figure RS-5 through design review, designating alternate routes for faster traffic, regulating off-site advertising, limiting grading in the view corridor through the grading ordinance, limiting travel speeds, and providing pullover areas with trash and recycling receptacles. (Note: County-designated scenic roadways, I-80 and SR 113, shown on General Plan Figure RS-5, are also shown on **Figure 5.15-1** Scenic Resources later in this section).	**Yes.** While there are no officially designated or eligible state scenic highways near the project site, I-80 (approximately 0.6 miles to the northwest of the project site) is a County-designated scenic roadway, which is proposed to be spanned by the gen-tie line (the last approximately 0.2 miles of the gen-tie line, including the span of I-80, non-jurisdictional project components). Although the span would be visible to travelers on I-80, it would not be noticeable as it would be placed between two existing transmission line spans that connect to the Vaca-Dixon Substation (adjacent to I-80). Although the resulting visual impact of the span would be less than significant, **MM VIS-1** should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations, title 14, section 15001(a)(2). The main project site (jurisdictional project components within CEC's Opt-In Certification) would not be visible to travelers on I-80 given the existing screening provided by surrounding orchards, trees, and residential and agricultural structures in the surrounding area. SR 113 is also a County-designated scenic roadway in the vicinity of the proposed project. However, at approximately 5 miles to the east and with a north-south orientation, the proposed project would not be visible to travelers on SR 113.
Development Review	
• **RS.I-22:** In new developments, require the use of fixtures that direct light toward target areas and shield it from spillage.	**Yes.** Proposed project lighting would be designed to provide the minimum illumination needed to achieve safety and security and would be downward-facing and shielded to focus illumination in the immediate area. All lighting associated with the proposed project would comply with Solano County requirements. Additionally, implementation of COCs **VIS-1, VIS-2**, and **VIS-3** (for jurisdictional project components), and **MMs VIS-1** and **VIS-2** (non-jurisdictional project components) would maintain the potential nighttime lighting impacts to a less-than-significant level. Applies to the operational phase of the proposed project.

TABLE 5.15-2 PROJECT CONSISTENCY WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS

Applicable LORS	Consistency and Basis For Determination
City of Vacaville General Plan Conservation and Open Space Element	
Scenic Resources	
• **Goal COS-8:** Maintain and enhance the quality of Vacaville's scenic and visual resources. • **Policy COS-P8.1:** Preserve scenic features and the feel of a city surrounded by open space and preserve view corridors to the hills and other significant natural areas.	**Yes.** As discussed previously in this document, the proposed project would not significantly impact designated scenic vistas or designated or eligible scenic highways. Although the County's General Plan states that the "county's agricultural landscapes, the delta and marshlands, and the oak and grass covered hills offer an abundance of scenic vistas," no specific views or vistas are identified (Solano County 2008). Although the project site is agricultural in character, there are no delta, marshlands, or oak and grass-covered hills either on the project site or in the surrounding area. While goals of the General Plan Agricultural Reserve Overlay seek to maintain scenic agricultural landscape resources along the I-80 corridor within the Agricultural Reserve Overlay areas, the project site is not located within an Agricultural Reserve Overlay area, and the nearest Overlay boundary is approximately 0.75 miles to the northeast. Furthermore, the nearest greenbelt (Vaca-Dixon) is located approximately 1.7 miles northeast of the project site. Due to the rather extended viewing distance and established structural context (I-80 corridor, Vaca-Dixon Substation, intervening utility and high-voltage transmission lines), a casual viewer in the greenbelt area would not notice the addition of proposed project features. While Vacaville residents value the views of the ridgelines of the Vaca Mountains (to the west and south) and English Hills (to the northwest), views of those scenic resources from the project vicinity are already somewhat compromised by existing energy infrastructure including utility lines, high-voltage transmission lines, and the Vaca-Dixon Substation. Therefore, given that the proposed project would not impact any designated scenic vistas, that other locally valued sensitive views are already affected by existing energy infrastructure, and that the proposed project structures and buildings would not obstruct or eliminate public views of scenic resources, the proposed project would be consistent with Policy COS-P8.1.
• **Policy COS-P8.2:** Retain major ridgelines and hillsides as open space.	**Yes.** The proposed project does not involve any ridgelines, hillsides, or open space.

5.15.4 Conclusions and Recommendations

As discussed, explained, and conditioned (see below) in this section, the proposed project components within the jurisdiction of CEC's Opt-In Certification (the primary BESS site and most of the gen-tie line [Segments 1 through 5]) would have a *significant effect on the environment* for the purposes of the CEQA Guidelines Appendix G Environmental Checklist Form, I. Aesthetics. The non-jurisdictional project components (the last approximately 0.2 miles of the gen-tie line [Segments 6 through 10], including the span of I-80; the proposed Corby 230-kV double bus bay to be added to Vaca-Dixon Substation; and the fiber-optic telecom line to be added to the Kilkenny Road right of way) would *not have a significant effect on the environment*.

CEC staff evaluated nine applicant-submitted KOPs. CEC staff completed a KOP Evaluation Worksheet for each KOP and concluded from six of the nine KOPs that, given the existing physical environment and observable land use character, that the color, form, texture, scale, structure heights, and equipment proposed on the project site cannot be fully camouflaged or screened to reduce impacts to less than significant.

Therefore, at six of the nine KOPs, the proposed project would create a *significant effect on the environment*. Despite the impact on views from Byrnes and Kilkenny roads and adjacent residences, some substation and gen-tie components of the proposed project would be visually consistent with the existing, nearby transmission lines. CEC staff has also concluded that with implementation of COCs **VIS-1** and **VIS-2**, the application of surface colors and finishes, combined with the installation of permanent vegetative landscape screening, would reduce the primary BESS site's impact on the visual character or quality of public views of the site and its surroundings from Byrnes and Kilkenny roads and adjacent residences, but not to a level that would be less than significant. For a discussion of significant environmental impacts that cannot be fully avoided or mitigated and project benefits, see **Section 11, Override Findings and Recommendations**.

CEC staff also concluded that the primary BESS site would have the potential to create a new source of substantial light, which would adversely affect nighttime views in the area. However, implementation of COC **VIS-3** (Outdoor Lighting Control and Management) would reduce the proposed project's night lighting impacts to a level that would be less than significant.

CEC staff has also concluded that, with implementation of COC's **VIS-1** through **VIS-3** and **MM VIS-1** and **MM VIS-2**, the proposed project would be consistent with the applicable state and local regulations and policies pertaining to the protection of scenic quality.

5.15.5 Proposed Conditions of Certification

If the CEC decides to certify the proposed project, CEC staff recommends the following COCs **VIS-1** through **VIS-3** for jurisdictional project components, which would both

mitigate visual impacts to the extent feasible and ensure consistency with applicable LORS.

VIS-1 Structural Surface Treatments The project owner shall use exterior surface coatings, colors, finishes, materials, and gloss levels that diffuse and minimize offsite and skyward illumination or collection, reflectance from the exterior surfaces of the project buildings, structures, and equipment. Specifically, the project owner shall use:

a. Exterior surface coatings, colors, finishes, materials, and gloss levels that minimize visual contrast and avoid introducing specular reflection within the existing physical landscape.

b. Exterior surface coatings, colors, finishes, materials, and gloss levels that shall conform to applicable architectural design and site development related requirements by the County of Solano (e.g., codes, ordinances).

The project owner shall submit to the CPM for approval an exterior surface coatings, colors, finishes, and materials plan (plan) for project components that satisfies the above requirements and includes:

1. A list of the large or major buildings, equipment, structures—including perimeter walls and fences, transmission line towers and/or poles, and aboveground pipelines serving the facility onsite and offsite. For each component, identify the proposed exterior surface coatings, colors, finishes, materials, and gloss levels identified by vendor, product name and number, and designation using the RAL color matching system or similar universal color designation system. Standard environmental colors from the BLM Standard Environmental Color Paint Tool (PC02-PC10) and gloss and sheen classifications consistent with the Master Painters Institute (MPI) architectural paint and coatings standards may also be used.
2. A color selection study shall be completed to identify suitable colors compatible with the surrrounding physical landscape. Prior to large-scale implementation, proposed color choices shall be tested under field conditions to confirm their effectiveness.
3. Supply one set of brochures showing color chips, and/or samples of the proposed coatings, colors, finishes, materials, and gloss levels.
4. A schedule for the completion of the applicationand installation of the coatings, colors, finishs, and materials.
5. A maintenance plan outlining procedures for the upkeep of the approved coatings, colors, finishes, materials, and gloss levels for the life of the project.

The project owner shall not purchase any exterior surface coatings, colors, finishes, materials for the project prior to CPM approval of the exterior surface plan.

Verification:

a. The project owner shall submit an exterior surface coatings, colors, finishes, and materials plan (plan) to the CPM for approval and simultaneously to the Planning Program Manager for the County of Solano (or designee) for review and comment at least ninety (90) days prior to executing a contract to purchase coatings, colors, finishes, and materials. The CPM shall provide the Planning Director or designee at least 30 days to review the plan and provide comments to the project owner and the CPM.

   If the CPM determines that revisions to the plan are required, the project owner shall submit a revised plan incorporating the specified changes for approval by the CPM prior to executing any vendor-related actions. All revisions must be approved by the CPM.

b. The project owner shall notify the CPM that exterior surface coatings, colors, finishes and materials of all listed buildings, equipment, and structures have been completed and are ready for inspection. With this notification, the project owner shall provide one set of color photographs showing the project from the key observation point(s) evaluated for the project certification, and individual color photographs of the completed exterior surface coatings, colors, finishes, and materials for the battery units, transformers, onsite substation, and aboveground transmission line monopoles. Color photographs may be submitted electronically or on digital media.

c. Exterior surface coatings, colors, finishes, and materials shall be installed/applied (completed) on the exterior surfaces of the large and major buildings, equipment, and structures prior to the start of commercial operation.

d. The project owner shall include in the Annual Compliance Report a description of the condition of the exterior surface coatings, colors, finishes, and materials for buildings, equipment, structures. The report shall include:

e. The condition of the exterior surfaces of buildings, equipment, and structures at the end of the reporting year.

   1. A listing of maintenance activities performed during the reporting year.
   2. A tentative time schedule for maintenance activities for the upcoming year.

VIS-2 Vegetative Landscape Screening Plan The project owner shall install and maintain landscaping-related improvements including trees, shrubs, ground cover and similar on the project site as illustrated in the Landscape Plan (Volume 2 App 4-1 Aesthetics Appendices, Appendix 4.1-B Landscape Plan, TN# 259884) and provided here as **Appendix 5.15B**.

The project owner shall submit to the CPM for approval and simultaneously to the Planning Program Manager for the County of Solano for review and

comment, a Vegetative Landscape Screening Plan (or equivalent plan) that satisfies the above requirements and includes:

a. The landscape design plan shall be presented at a reasonable scale. The plan shall include a planting plan with plant list prepared by a qualified landscape architect familiar with local growing conditions of proposed species, specifying installation sizes, growth rates, expected time to maturity, expected size at five years and at maturity, spacing, number, availability, and a discussion of the suitability of the plants for the site conditions; specifications for ground cover, top-dressing of planting areas and weed abatement measures. Existing vegetation (if any) shall be noted on the plan.

b. Landscape-related improvements and the irrigation system on the project site shall comply with state and county water conservation/efficent landscaping requirements.

c. A maintenance plan that includes procedures for the upkeep of the landscape-related improvements and the irrigation system on the site for the life of the project.

Verification:

a. The project owner shall submit a Vegetative Landscape Screening Plan to the CPM for approval and simultaneously to the Planning Program Manager for the County of Solano or designee for review and comment ninety (90) days prior to executing a contract to purchase landscaping-related improvements for the project. The CPM shall provide the Planning Program Manager at least thirty (30) days to review the plan and provide comments to the applicant and the CPM.

b. If the CPM determines the landscaping design plan requires a revision, the project owner shall provide to the CPM a plan with the specified revision(s) for approval by the CPM before any action or activity is executed. Any revision to the plan must be approved by the CPM.

c. The project owner shall notify the CPM when the planting/installation of the landscaping-related improvements (e.g., vegetative materials) have been completed and are ready for inspection. With this notification, the project owner shall supply to the CPM one set of color photographs showing the landscaping-related improvements. Color photographs may be electronically filed or manually filed on electronic media. After inspection, if the CPM requires a modification to a landscaping-related improvement (e.g., design, installation, location), the project owner shall have 30 days after receiving the notification to complete the modification and request a follow-up inspection.

d. The project owner shall supply a description of the condition (status) of the landscaping-related improvements and the irrigation system, and maintenance activities performed during the reporting year in the Annual Compliance Report.

VIS-3 Outdoor Lighting Control and Management New outdoor light and glare emitted from the project site and construction laydown area shall not result in offsite and skyward light pollution. The project owner shall utilize luminaires that:

a. Are only on when needed.

b. Only illuminate the area that requires lighting.

c. Illuminate no brighter than necessary.

d. Minimize blue light emissions.

e. Are fully shielded (BUG Rating U0).

f. Be DarkSky International "DarkSky Approved" program products.

g. Comply with the applicable exterior lighting requirements adopted by the County of Solano (e.g., codes, ordinances).

Building off the preliminary lighting plan submitted to date (TN# 262555, Appendix 10-B [Preliminary Substations Lighting Plan] and Appendix 10-C [Luminaire Specification Sheets], the project owner shall submit to the CPM for approval and simultaneously to the Planning Program Manager for the County of Solano for review and comment light pollution control plan (or equivalent prepared) that satisfies the above requirements and includes:

1. One set of product brochures and/or printouts (e.g., diagrams, drawings) showing and describing the types of outdoor luminaires to be installed on buildings, equipment, structures, and any other locations on the project site (lighting schedule).

2. Diagrams or drawings of the project site showing the approximate location, direction and angle of each luminaire (luminaire location).

Verification:

a. The project owner shall submit the light pollution control plan (plan) to the CPM for approval and simultaneously to the Planning Program Manager for the County of Solano or designee for review and comment at least ninety (90) days prior to executing a contract to purchase permanent outdoor luminaires. The CPM shall provide the Planning director or designee at least thirty (30) days to review the plan and provide comments to the project owner and CPM.

b. If the CPM determines that revisions to the plan are required, the project owner shall submit a revised plan incorporating the specific changes for CPM approval prior to executing any vendor-related actions. All revisions must be approved by the CPM.

c. The project owner shall notify the CPM when the installation of the luminaires is completed and ready for inspection. If the CPM requires modifications to any luminaire (e.g., design, installation, location), the project owner shall

complete the modifications within 30 days after receiving the notification and request a follow-up inspection.

d. If a light and glare complaint is filed with the project owner, the owner shall submit a completed complaint resolution form report as specified in the Compliance Conditions to the CPM within 48 hours of receiving the complaint, along with a proposed resolution and schedule. The project owner shall notify the CPM within 48 hours of resolving the complaint.

5.15.6 Recommended Mitigation Measures

For the non-jurisdictional project components, the following mitigation measures (MMs) should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations, title 14, section 15091(a)(2).

MM VIS-1 Structural Surface Treatments PG&E shall use exterior surface coatings, colors, finishes, materials, and gloss levels that diffuse and minimize offsite and skyward illumination or collection, reflectance from the exterior surfaces of the structures and equipment. Specifically, PG&E shall use:

a. Exterior surface coatings, colors, finishes, materials, and gloss levels that minimizes visual contrast and avoid introducing specular reflection within the existing physical landscape.

b. Exterior surface coatings, colors, finishes, materials, and gloss levels shall conform to applicable architectural design and site development related requirements adopted by the County of Solano.

PG&E shall prepare and implement an exterior surface coatings, colors, finishes, and materials plan (plan) for the project components that satisfies the above requirements and includes:

1. A list of the large or major buildings, equipment, structures—including perimeter walls and fences, transmission line towers and/or monpoles, and aboveground pipelines serving the facility onsite and offsite. For each component, identify the proposed exterior surface coatings, colors, finishes, materials, and gloss levels identified by vendor, product name and number, and designation using the RAL color matching system or similar universal color designation system. Standard environmental colors from the BLM Standard Environmental Color Paint Tool (PC02-PC10) and gloss and sheen classifications consistent with the Master Painters Institute (MPI) architectural paint and coatings standards may also be used.

2. A color selection study shall be completed to identify suitable colors compatible with the surrrounding physical landscape. Prior to large-scale implementation, proposed color choices shall be tested under field conditions to confirm their effectiveness.

3. Supply one set of brochures showing color chips, and/or samples of the proposed coatings, colors, finishes, materials, and gloss levels.
4. A schedule for the completion of the application and installation of the coatings, colors, finishes, and materials.
5. A maintenance plan outlining procedures for the upkeep of the approved coatings, colors, finishes, materials, and gloss levels for the life of the project.

MM VIS-2 Outdoor Lighting Control and Management New outdoor light and glare emitted from PG&E's portion of the gen-tie line (Segments 6 through 10, including the span of I-80), the proposed Corby 230-kV double bus bay to be added to Vaca-Dixon Substation, and the fiber-optic telecom line to be added to the Kilkenny Road right of way shall not result in offsite or skyward light pollution. PG&E shall utilize luminaires that:

a. Are only on when needed.
b. Only illuminate the area that requires lighting.
c. Illuminate no brighter than necessary.
d. Minimize blue light emissions.
e. Are fully shielded (BUG Rating U0).
f. Are DarkSky International "DarkSky Approved" program products.
g. Comply with the applicable exterior lighting requirements adopted by the County of Solano (e.g., codes, ordinances).

Building off the preliminary lighting plans submitted to date (TN# 268369, Appendix 2-D [Preliminary Substation Lighting Plan – BCR-P010-04] and TN# 262555, Appendix 10-C [Luminaire Specification Sheets]) PG&E shall prepare and implement an outdoor lighting control and management plan or equivalent plan prepared for the project that satisfies the above requirements and includes:

1. One set of product brochures and/or printouts (e.g., diagrams, drawings) describing the types of exterior luminaires to be installed on buildings, equipment, structures, and any other locations on the project site (lighting schedule).
2. Diagrams or drawings of the project site showing the approximate location, direction and angle of each luminaire (luminaire location).

5.15.7 References

Amir and Gidalizon 1990 – S. Amir and E. Gidalizon (Amir and Gidalizon). "Expert-based method for the evaluation of visual absorption capacity of the landscape." Journal of Environmental Management, Vol. 30, No. 3, April 1990, cited by The James Hutton Institute, August 12, 2014. Accessed on November 29, 2025.

Available online at: https://macaulay.webarchive.hutton.ac.uk/ccw/task-two/evaluate.html

California Code of Regulations, Title 14, section 15000 et seq.

California Code of Regulations, Title 14, Division 6, Chapter 3, Appendix G Environmental Checklist Form, I. Aesthetics as amended December 27, 2024. Accessed on November 29, 2025. https://regulations.justia.com/states/california/title-14/division-6/chapter-3/appendix-g/

Caltrans 2025 – California Department of Transportation (Caltrans). California State Scenic Highway System Map and Scenic Highway System Lists. Accessed on: November 16, 2025. Accessed online at: https://dot.ca.gov/programs/design/lap-landscape-architecture-and-community-livability/lap-liv-i-scenic-highways

California Public Resources Code section 21000 et seq.

California Public Resources Code section 21060.5

California Public Resources Code section 21064.5

California Public Resources Code section 21071(a)

California Public Resources Code section 21071(b)

California Public Resources Code section 21099

City of Vacaville 2025. City of Vacaville General Plan Chapter 4 Conservation and Open Space Element. Accessed on: November 18, 2025. Accessed online at: https://www.cityofvacaville.gov/home/showpublisheddocument/5414/638371466917070000

Daniel and Vining 1983 – T. Daniel and J. Vining (Daniel and Vining). "Methodological Issues in the Assessment of Landscape Quality," Behaviour and the Natural Environment (eds. Altman, I. and Wohwill, J.), Plenum Press. New York, 1983, pp. 39-83 cited by The James Hutton Institute, August 12, 2014. Accessed on November 29, 2025. Available online at: http://www.macaulay.ac.uk/ccw/task-two/evaluate.html

DarkSky 2024 – DarkSky International (DarkSky). Accessed on November 29, 2025. Available online at: https://www.darksky.org

Dark Sky Map 2025 – The Dark Sky Map: Best Locations for Stargazing, "World Atlas Night Sky Brightness," Accessed on November 28, 2025. Accessed online at: https://www.darkskymap.com/nightSkyBrightness

Dark Sky Society 2024 – Dark Sky Society. What is Light Pollution? Accessed on November 29, 2025. Accessed online at: https://www.darkskysociety.org/handouts/whatislp.pdf

Electrical4U 2020 – Electrical4U, "What is Reflectance?" October 11, 2020. Accessed on November 29, 2025. Available online at: https://www.electrical4u.com/-what-is-reflectance/

Fenelly and Perry 2017 – Fennelly, Lawrence J. CPOI, CSSI, CHL-III, CSSP-1, Marianna A. Perry M.S., CPP, CSSP-1, Physical Security: 150 Things You Should Know, Second Edition, Butterworth-Heinemann, ISBN 978-0-12-809487-7, 2017. Accessed on November 29, 2025. Accessed online at: https://www.sciencedirect.com/topics/computer-science/security-lighting

FFWCC 2024 – Florida Fish and Wildlife Conservation Commission (FFWCC), "About Lighting Pollution," n.d., Accessed on November 29, 2025. https://myfwc.com/conservation/you-conserve/lighting/pollution/

Hull and Revell 1989 – R. Hull, and G. Revell (Hull and Revell). "Issues in sampling landscapes for visual quality assessments," Landscape and Urban Planning, Vol. 17, No. 4, August 1989, pp. 323-330 cited by The James Hutton Institute, August 12, 2014. Accessed on November 29, 2025. Accessed online at: https://www.sciencedirect.com/science/article/abs/pii/0169204689900868

Labsphere, Inc. 2024 – Labsphere, Inc. "Technical Guide: Reflectance Coatings and Materials," n.d. Accessed on November 29, 2025. Accessed online at:

https://www.labsphere.com/wp-content/uploads/2024/05/ReflectanceCoatingsMaterialsTechGuideRev04.pdf

Mira Mar Mobile Community v. City of Oceanside (2004) 119 Cal. App. 4th 477.

NIEHS 2015 – National Institute of Environmental Health Sciences, "The Impact of Artificial Lighting on Nocturnal Wildlife," April 20, 2015. Accessed on November 29, 2025. Accessed online at: https://kids.niehs.nih.gov/topics/natural-world/wildlife/ecology/lighting

NRCS 2025 – Natural Resources Conservation Service, Accessed on November 29, 2025. Accessed online at: https://www.nrcs.usda.gov/our-agency/cultural-resources

Palmer and Robin 2001 – J. Palmer and R. Hoffman, "Rating reliability and representation validity in scenic landscape assessments," Landscape and Urban Planning, Vol. 54, 2001.

Rodda Paint Company 2024 – Rodda Paint Company, "Selecting Gloss Level," n.d. Accessed on November 29, 2025. Accessed online at: https://www.roddapaint.com/how-to/selecting-gloss-level/

Roland 2019 – James Roland, "How Far Can We See and Why?" May 23, 2019, <https://www.healthline.com/health/how-far-can-the-human-eye-see>, accessed on November 29, 2025.)

Smardon 1986 – Smardon, R.C., J.F. Palmer, J.P. Felleman, (Smardon). Foundations for Visual Project Analysis, Wiley, New York, 1986.

Solano County 2008. Solano County General Plan, Chapter 4, Resources. 2008. Accessed on November 17, 2025. Available online at: https://content.solanocounty.gov/sites/default/files/2025-05/Chapter%204%20-%20Resources.pdf

TT 2025a – Tetra Tech (TN 262554). Project Description Update. Dated April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025b – Tetra Tech (TN 262555). Data Request Response #1. Dated April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026e – Tetra Tech (TN 268433). Project Description Update #2, Part 2. Dated February 2, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026h – Tetra Tech (TN 269192). Data Response Set #5. Dated March 13, 2026. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=269192&DocumentContentId=106264

Key Observation Point Evaluation Worksheets
Summary Sheet for Worksheet Tables

KOP 1 Kilkenny Road at I-80 Frontage

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate**	
	Detractors	**Moderate**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant		
	High		
	Moderate to High		
	Moderate		
	Low to Moderate	√	
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**7**

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.			8
Subordinate	**The project is of significant size but occupies a minor part of the landscape.**			**4**
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**4**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.		4
Spatial position of the project.	prominent			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	prominent			
	significant	Insignificant All categories rated inconspicuous.		**0**
	inconspicuous			
		Single highest points	Maximum 6 points	**0**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	Moderate
8-15	**Weak**
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Weak**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate	**√**	
	Low		

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	**Project indistinct or not obvious within the view in the landscape.**	**√**

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	Significant Effect	
	Less Than Significant Effect	**√**

KOP 1 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description								Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced		discordant	√	chaotic		
Complexity	uniform		simple		diverse	√	complex		
Dynamic	sweeping		spreading		disperse	√	channeled		
Enclosure	expansive		open	√	enclosed		constrained		
Pattern (two-dims.)	formal		organized	√	regular		random		
Perceptual									
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty
Security	intimate		comfortable	√	safe		unsettling		threatening
Stimulus	inspiring		challenging		interesting	√	bland		monotonous
Tranquility	inaccessible		remote		vacant		peaceful	√	busy
Basic Design Element									
Color	monochrome		muted	√	colorful	√	garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded		
Line	straight	√	curved	√	vertical	√	horizontal	√	
Texture	smooth	√	textured	√	rough	√	very rough		
Scale	intimate		small		large	√	vast		

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 1 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
√	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 1 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 1 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 3	**3**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 2	**2**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+7**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 1 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.		8
Subordinate	**The project is of significant size but occupies a minor part of the landscape.**		**4**
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**4**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 1 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant **= 4 points** Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**4**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 1 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.	√	Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 1 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H (M) L
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	H (M) L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H (M) L
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H (M) L
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 1 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE

Dominant	Prominent	Conspicuous	Apparent	Unobtrusive
Project commands or controls the view in the landscape.	Project stands out or is striking in the view in the landscape.	Project is clearly visible and noticeable within the view in the landscape.	Project visible or evident within the view in the landscape.	**Project indistinct or not obvious within the view in the landscape.**
Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

Landscape		Project Prominence		Visual Absorption Capability	Magnitude Of Change		CEQA Guidelines Level of Effect On The Environment (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		Significant Effect
Unity	**Moderate**	Strong			Prominent		
Public View	**Low**	Moderate		**Moderate**	Conspicuous		
Visibility	**Low to Moderate**	**Weak**	√		Apparent		
		Negligible		Low	**Unobtrusive**	√	**Less Than Significant Effect**

KOP 1 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 2a Byrnes Rd. & Kilkenny Rd. View South

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Diversity	**Moderate**	
	Detractors	**Moderate**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	**√**	
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**17**

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**			**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	**prominent**	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	**Codominant** 1 category rated prominent, or 2 categories rated significant.		**4**
Spatial position of the project.	prominent			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	prominent			
	inconspicuous	Insignificant All categories rated inconspicuous.		0
		Single highest points	Maximum 6 points	**4**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate	**√**	
	Low		

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 2a Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced		discordant	√	chaotic				
Complexity	uniform		simple		diverse	√	complex				
Dynamic	sweeping		spreading		disperse	√	channeled				
Enclosure	expansive		open	√	enclosed		constrained				
Pattern (two-dims.)	formal		organized	√	regular		random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable	√	safe		unsettling		threatening		
Stimulus	inspiring		challenging		interesting	√	bland		monotonous		
Tranquility	inaccessible		remote		vacant		peaceful	√	busy		
Basic Design Element											
Color	monochrome		muted	√	colorful	√	garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.		
Form	angular	√	curvilinear		horizontal	√	rounded				
Line	straight	√	curved		vertical	√	horizontal	√			
Texture	smooth		textured	√	rough		very rough				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare			√	common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 2a Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 2a Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 2a Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3**	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Form	Strong = 3	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Line	Strong = 3	x 1	**2**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Texture	Strong = 3	x 1	**2**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
	Overall Rating[9]		**+17**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 2a Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 2a Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category			Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]		Dominant 2-3 categories rated prominent = 6 points **Codominant** 1 category rated prominent, or 2 categories rated significant **= 4 points** Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**	
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.	
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.	
	inconspicuous	Canopied,[2] indistinct or obscured landscape.	
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]		
	Rating	**Description**	
	prominent	High Level,[4] High Slope,[4] Interfluve[4]	
	significant	Low Level,[4] Lowslope,[4] Midslope[4]	
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]	
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]		
	Rating	**Description**	
	prominent	All or a significant part of the project will be seen against sky or water.	
	inconspicuous	All or a significant part of the project will be seen against land.	
		Single highest points / Maximum 6 points	**4**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 2a Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.	√	Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 2a Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H (M) L
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H (M) L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 2a Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		**Significant Effect**
Unity	**Moderate**	**Strong**	√		**Prominent**	√	
Public View	**Low**	Moderate		**Moderate**	Conspicuous		
Visibility	**High**	Weak			Apparent		Less Than Significant Effect
		Negligible		Low	Unobtrusive		

KOP 2a Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 2b Byrnes Rd. & Kilkenny Rd. View SW

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant		
	High	√	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	Rating	**Weight**	**Points**
Color	**Strong = 3**	x 3	**9**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	**Strong = 3**	x 2	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+20**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	**The project is the major object in the landscape and occupies a large part of the landscape.**	**12**
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.	8
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**12**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	**prominent**	**Dominant** 2-3 categories rated prominent.	**6**
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	**prominent**		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	**prominent**		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	**Severe**
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Severe**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate		
	Low	√	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	√
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	√
	Less Than Significant Effect	

KOP 2b Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic				
Complexity	uniform		simple		diverse	√	complex				
Dynamic	sweeping		spreading	√	disperse		channeled				
Enclosure	expansive		open	√	enclosed		constrained				
Pattern (two-dims.)	formal		organized		regular	√	random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable	√	safe		unsettling		threatening		
Stimulus	inspiring		challenging		interesting	√	bland		monotonous		
Tranquility	inaccessible		remote		vacant		peaceful	√	busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.		
Form	angular		curvilinear		horizontal	√	rounded	√			
Line	straight		curved	√	vertical	√	horizontal	√			
Texture	smooth		textured	√	rough		very rough				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 2b Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 2b Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 2b Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	**Strong = 3**	x 3	**9**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Form	**Strong = 3**	x 2	**6**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Line	**Strong = 3**	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
Texture	Strong = 3	x 1	**2**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Moderate = 2			
	Weak = 1			
	None = 0			
	Overall Rating[9]		**+20**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 2b Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	**The project is the major object in the landscape and occupies a large part of the landscape.**		**12**
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**12**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 2b Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition …. Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent **= 6 points** Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 2b Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.	√	Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.							

KOP 2b Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H M (L)
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H M (L)
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 2b Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE

Dominant	Prominent	Conspicuous	Apparent	Unobtrusive
Project commands or controls the view in the landscape.	Project stands out or is striking in the view in the landscape.	Project is clearly visible and noticeable within the view in the landscape.	Project visible or evident within the view in the landscape.	Project indistinct or not obvious within the view in the landscape.
Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

Landscape		Project Prominence		Visual Absorption Capability	Magnitude Of Change		CEQA Guidelines Level of Effect On The Environment (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	**Severe**	√	High	**Dominant**	√	**Significant Effect**
Unity	**Moderate**	Strong			Prominent		
Public View	**Low**	Moderate		Moderate	Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible		**Low**	Unobtrusive		Less Than Significant Effect

KOP 2b Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 3 Byrnes Road Viewing North

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant		
	High	√	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+9**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	prominent	**Dominant** 2-3 categories rated prominent.	**6**
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	**prominent**		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	**prominent**		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	**Moderate**
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Moderate**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate	**√**	
	Low		

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 3 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced		discordant	√	chaotic				
Complexity	uniform		simple		diverse	√	complex				
Dynamic	sweeping		spreading		disperse	√	channeled				
Enclosure	expansive		open	√	enclosed		constrained				
Pattern (two-dims.)	formal		organized		regular	√	random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	inaccessible		remote		vacant		peaceful	√	busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish				The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded				
Line	straight	√	curved		vertical	√	horizontal	√			
Texture	smooth		textured	√	rough		very rough				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 3 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 3 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 3 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 3	**3**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+9**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 3 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 3 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 3 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 3 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H M (L)
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H (M) L
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 3 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE

Dominant	Prominent	Conspicuous	Apparent	Unobtrusive
Project commands or controls the view in the landscape.	**Project stands out or is striking in the view in the landscape.**	Project is clearly visible and noticeable within the view in the landscape.	Project visible or evident within the view in the landscape.	Project indistinct or not obvious within the view in the landscape.
Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

Landscape		Project Prominence		Visual Absorption Capability	Magnitude Of Change		CEQA Guidelines Level of Effect On The Environment (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		**Significant Effect**
Unity	**Moderate**	Strong			**Prominent**	√	
Public View	**Low**	**Moderate**	√	**Moderate**	Conspicuous		
Visibility	**High**	Weak			Apparent		Less Than Significant Effect
		Negligible		Low	Unobtrusive		

KOP 3 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 4 North Meridian Road Overpass

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Diversity	**Moderate**	
	Detractors	**Moderate**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant		
	High		
	Moderate to High		
	Moderate		
	Low to Moderate	√	
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+7**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.	8
Subordinate	**The project is of significant size but occupies a minor part of the landscape.**	**4**
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points | Maximum 12 points	**4**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	**prominent**	**Dominant** 2-3 categories rated prominent.	**6**
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	prominent		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	**prominent**		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points | Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	**Moderate**
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Moderate**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
	Rating	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		
	Moderate	**√**	
	Low		

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	**Project indistinct or not obvious within the view in the landscape.**	**√**

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	Significant Effect	
	Less Than Significant Effect	**√**

KOP 4 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description								Check (√) the description that best describes the aspect of the landscape.	
Balance	harmonious		balanced		discordant	√	chaotic			
Complexity	uniform		simple		diverse		complex	√		
Dynamic	sweeping		spreading		disperse		channeled	√		
Enclosure	expansive		open		enclosed		constrained	√		
Pattern (two-dims.)	formal		organized		regular	√	random			
Perceptual										
Pleasure	beautiful		attractive		pleasant		unpleasant	√	nasty	
Security	intimate		comfortable		safe		unsettling	√	threatening	
Stimulus	inspiring		challenging	√	interesting		bland	√	monotonous	
Tranquility	inaccessible		remote		vacant		peaceful	√	busy	√
Basic Design Element										
Color	monochrome		muted		colorful	√	garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.	
Form	angular	√	curvilinear	√	horizontal	√	rounded	√		
Line	straight	√	curved	√	vertical	√	horizontal	√		
Texture	smooth	√	textured	√	rough		very rough			
Scale	intimate		small		large	√	vast			

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare			√	common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
√	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 4 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 3	**3**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 2	**2**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+7**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.		8
Subordinate	**The project is of significant size but occupies a minor part of the landscape.**		**4**
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**4**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 4 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition …. Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.		Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.	√	Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 4 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	(H) M L
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H M (L)
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H (M) L
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H (M) L
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 4 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	**Project indistinct or not obvious within the view in the landscape.** Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High	Dominant		Significant Effect
Unity	Table 4 **(Moderate)**	Strong			Prominent		
Public View	**Low**	**Moderate**	√	**Moderate**	Conspicuous		
Visibility	**Low to Moderate**	Weak			Apparent		
		Negligible		Low	**Unobtrusive**	√	**Less Than Significant Effect**

KOP 4 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 5a Kilkenny Rd. Viewing SE (Gen-tie)

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate to High**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant		
	High	√	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	**Strong = 3**	x 2	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+12**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.	12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**	**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**8**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	**prominent**	**Dominant** 2-3 categories rated prominent.	**6**
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	**prominent**		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	**prominent**		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate	**√**	
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 5a Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic				
Complexity	uniform		simple	√	diverse		complex				
Dynamic	sweeping		spreading	√	disperse		channeled				
Enclosure	expansive		open	√	enclosed		constrained				
Pattern (two-dims.)	formal		organized	√	regular		random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	inaccessible		remote		vacant		peaceful	√	busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.		
Form	angular	√	curvilinear		horizontal	√	rounded				
Line	straight	√	curved	√	vertical	√	horizontal	√			
Texture	smooth		textured	√	rough		very rough				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly	√			muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 5a Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 5a Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 5a Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 3	**3**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 2	**6**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 **Moderate = 2** **Weak = 1** None = 0	x 1	**2**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+12**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 5a Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	**The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.**		**8**
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**8**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 5a Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 5a Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 5a Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H M (L)
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H (M) L
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H (M) L
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 5a Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High **Moderate** **Low**	Dominant		**Significant Effect** Less Than Significant Effect
Unity	**Moderate**	**Strong**	√		**Prominent**	√	
Public View	**Low**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 5a Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 5b Kilkenny Rd. Viewing ESE (Gen-tie)

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Moderate**	
	Diversity	**Moderate to High**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	**Dominant**	√	
	High		
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**4**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+14**

Table 8 SCALE DOMINANCE		
Rating		**Points**
Dominant	**The project is the major object in the landscape and occupies a large part of the landscape.**	**12**
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.	8
Subordinate	The project is of significant size but occupies a minor part of the landscape.	4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.	0
	Single highest points / Maximum 12 points	**12**

Table 9 SPATIAL DOMINANCE			
Category	**Rating**	**Single Highest Rating**	**Points**
Spatial composition of the landscape.	**prominent**	**Dominant** 2-3 categories rated prominent.	**6**
	significant		
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.	4
Spatial position of the project.	**prominent**		
	significant		
	inconspicuous	Subordinate 1 category rated significant.	2
Backdrop to the project.	**prominent**		
	inconspicuous	Insignificant All categories rated inconspicuous.	0
		Single highest points / Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	**Severe**
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Severe**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
	Rating	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
Table 11 CAPABILITY **Table 12 ABSORPTION**	High		
	Moderate	**√**	
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	**Project commands or controls the view in the landscape.**	**√**
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 5b Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic				
Complexity	uniform		simple	√	diverse		complex				
Dynamic	sweeping		spreading	√	disperse		channeled				
Enclosure	expansive		open	√	enclosed		constrained				
Pattern (two-dims.)	formal		organized	√	regular		random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	inaccessible		remote		vacant		peaceful	√	busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish		The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.		
Form	angular	√	curvilinear		horizontal	√	rounded				
Line	straight	√	curved	√	vertical	√	horizontal	√			
Texture	smooth		textured	√	rough		very rough				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare		√		common	Are there many examples of this type of landscape in the region?
Diversity	orderly	√			muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 5b Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.
Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.	

KOP 5b Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 5b Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 3	**6**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 2	**4**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 1	**3**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+14**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 5b Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	**The project is the major object in the landscape and occupies a large part of the landscape.**		**12**
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**12**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 5b Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 5b Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 5b Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	H M (L)
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H (M) L
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H M (L)
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 5b Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project stands out or is striking in the view in the landscape. Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	**Severe**	√	High **Moderate** **Low**	**Dominant**	√	**Significant Effect** Less Than Significant Effect
Unity	**Moderate**	Strong			Prominent		
Public View	**Low**	Moderate			Conspicuous		
Visibility	**Dominant**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 5b Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated.** The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 5c Kilkenny Rd. Viewing North (Gen-tie)

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Diversity	**Low to Moderate**	
	Detractors	**Moderate**	
	Distinctiveness	**Low to Moderate**	
	Integrity	**Low to Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	**√**	
	None		
Table 6 VISIBILITY	Dominant		
	High	**√**	
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low		

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	**Strong = 3**	x 2	**6**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	**Strong = 3**	x 1	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+13**

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	**The project is the major object in the landscape and occupies a large part of the landscape.**			**12**
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.			8
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.			0
		Single highest points	Maximum 12 points	**12**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	**prominent**	**Dominant** 2-3 categories rated prominent.		**6**
	significant			
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.		4
Spatial position of the project.	**prominent**			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	**prominent**			
		Insignificant All categories rated inconspicuous.		0
	inconspicuous			
		Single highest points	Maximum 6 points	**6**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	**Strong**
16-23	Moderate
8-15	Weak
0-7	Negligible
***(Add Points from Tables 7, 8, and 9)**	**Rating = Strong**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
Table 11 CAPABILITY **Table 12 ABSORPTION**	**Rating**	**Checkbox**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	High		
	Moderate	**√**	
	Low	**√**	

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	**Project stands out or is striking in the view in the landscape.**	**√**
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	Project indistinct or not obvious within the view in the landscape.	

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	**Significant Effect**	**√**
	Less Than Significant Effect	

KOP 5c Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description										Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced		discordant	√	chaotic				
Complexity	uniform		simple		diverse	√	complex				
Dynamic	sweeping		spreading		disperse	√	channeled				
Enclosure	expansive		open	√	enclosed		constrained				
Pattern (two-dims.)	formal		organized		regular	√	random				
Perceptual											
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty		
Security	intimate		comfortable		safe	√	unsettling		threatening		
Stimulus	inspiring		challenging		interesting		bland	√	monotonous		
Tranquility	inaccessible		remote		vacant		peaceful	√	busy		
Basic Design Element											
Color	monochrome		muted	√	colorful		garish				The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear	√	horizontal	√	rounded				
Line	straight	√	curved	√	vertical	√	horizontal				
Texture	smooth	√	textured	√	rough		very rough				
Scale	intimate		small		large	√	vast				

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare			√	common	Are there many examples of this type of landscape in the region?
Diversity	orderly			√	muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many		√		few	Are there landscape features out of place?
Distinctiveness	distinct			√	indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole			√	remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 5c Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 5c Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 5c Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 3	**3**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	**Strong = 3** Moderate = 2 Weak = 1 None = 0	x 2	**6**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 **Moderate = 2** Weak = 1 None = 0	x 1	**2**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+12**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 5c Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	**The project is the major object in the landscape and occupies a large part of the landscape.**		**12**
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	The project is a small object occupying an exceedingly small area in the landscape.		0
	Single highest points	Maximum 12 points	**12**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 5c Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			**Dominant** 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points Insignificant All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**6**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 5c Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.		Low amount of topographic diversity and variety.	√
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.		Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	√
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.		Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.	√	Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 5c Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	H M (L)
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	H M (L)
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	H M (L)
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	H (M) L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	H (M) L
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	H (M) L
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	H M (L)
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 5c Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape. Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	**Project stands out or is striking in the view in the landscape.** Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project is clearly visible and noticeable within the view in the landscape. Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project visible or evident within the view in the landscape. Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project indistinct or not obvious within the view in the landscape. Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS							
Landscape		**Project Prominence**		**Visual Absorption Capability**	**Magnitude Of Change**		**CEQA Guidelines Level of Effect On The Environment** (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		High **Moderate** **Low**	Dominant		**Significant Effect** Less Than Significant Effect
Unity	**Low to Moderate**	**Strong**	√		**Prominent**	√	
Public View	**Low**	Moderate			Conspicuous		
Visibility	**High**	Weak			Apparent		
		Negligible			Unobtrusive		

KOP 5c Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Key Observation Point Evaluation Worksheets

Summary Sheet for Worksheet Tables

KOP 6 Sacramento Valley National Cemetery

LANDSCAPE			
Table 3 LANDSCAPE CHARACTER	Aesthetic Aspect		See attached Table 3.
	Perceptual Aspect		
	Basic Design Element		
	Landscape	**Rating**	Write the rating selected in the attached Table 4.
Table 4 UNITY	Rarity	**Low to Moderate**	
	Diversity	**Moderate**	
	Detractors	**Low to Moderate**	
	Distinctiveness	**Moderate**	
	Integrity	**Moderate**	
	Rating	**Checkbox**	Check (√) the rating selected in the attached Tables 5 and 6.
Table 5 PUBLIC VIEW	High		
	Moderate		
	Low	√	
	None		
Table 6 VISIBILITY	Dominant		
	High		
	Moderate to High		
	Moderate		
	Low to Moderate		
	Low	√	

PROJECT PROMINENCE			
Table 7 Basic Design Element Contrast			
Basic Design Element	**Rating**	**Weight**	**Points**
Color	Strong = 3	x 3	**3**
	Moderate = 2		
	Weak = 1		
	None = 0		
Form	Strong = 3	x 2	**2**
	Moderate = 2		
	Weak = 1		
	None = 0		
Line	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
Texture	Strong = 3	x 1	**1**
	Moderate = 2		
	Weak = 1		
	None = 0		
		Maximum 21 points	**+7**

Table 8 SCALE DOMINANCE				
Rating				**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.			12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.			8
Subordinate	The project is of significant size but occupies a minor part of the landscape.			4
Insignificant	**The project is a small object occupying an exceedingly small area in the landscape.**			**0**
		Single highest points	Maximum 12 points	**0**

Table 9 SPATIAL DOMINANCE				
Category	**Rating**	**Single Highest Rating**		**Points**
Spatial composition of the landscape.	prominent	Dominant 2-3 categories rated prominent.		6
	significant			
	inconspicuous	Codominant 1 category rated prominent, or 2 categories rated significant.		4
Spatial position of the project.	prominent			
	significant			
	inconspicuous	Subordinate 1 category rated significant.		2
Backdrop to the project.	prominent			
	significant	Insignificant All categories rated inconspicuous.		**0**
	inconspicuous			
		Single highest points	Maximum 6 points	**0**

Table 10 PROJECT PROMINENCE RATING*	
Total Points	**Rating**
32-39	Severe
24-31	Strong
16-23	Moderate
8-15	Weak
0-7	**Negligible**
***(Add Points from Tables 7, 8, and 9)**	**Rating = Negligible**

Tables 11 and 12 VISUAL ABSORPTION CAPABILITY			
	Rating	**Checkbox**	
Table 11 CAPABILITY **Table 12 ABSORPTION**	**High**	**√**	The existing landscape's ability to absorb the physical change by the proposed project without an alteration to its visual character.
	Moderate		
	Low		

Table 13 MAGNITUDE OF CHANGE		
		Checkbox
Dominant	Project commands or controls the view in the landscape.	
Prominent	Project stands out or is striking in the view in the landscape.	
Conspicuous	Project is clearly visible and noticeable within the view in the landscape.	
Apparent	Project visible or evident within the view in the landscape.	
Unobtrusive	**Project indistinct or not obvious within the view in the landscape.**	**√**

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS		
CEQA Guidelines Level of Effect on the Environment	Significant Effect	
	Less Than Significant Effect	**√**

KOP 6 Full Evaluation Worksheets (Tables 3 through 15)

Table 3 LANDSCAPE CHARACTER

Aesthetic	Description												Check (√) the description that best describes the aspect of the landscape.
Balance	harmonious		balanced	√	discordant		chaotic						
Complexity	uniform		simple		diverse	√	complex						
Dynamic	sweeping		spreading	√	disperse		channeled						
Enclosure	expansive		open	√	enclosed		constrained						
Pattern (two-dims.)	formal		organized		regular	√	random						
Perceptual													
Pleasure	beautiful		attractive		pleasant	√	unpleasant		nasty				
Security	intimate		comfortable		safe	√	unsettling		threatening				
Stimulus	inspiring		challenging		interesting	√	bland		monotonous				
Tranquility	inaccessible		remote		vacant		peaceful	√	busy				
Basic Design Element													
Color	monochrome		muted	√	colorful		garish						The basic design elements are the source of visual contrast in the landscape that an individual sees and responds to when viewing a space.
Form	angular	√	curvilinear		horizontal	√	rounded						
Line	straight	√	curved	√	vertical	√	horizontal	√					
Texture	smooth		textured	√	rough		very rough						
Scale	intimate		small		large	√	vast						

Adapted from Carys Swanwick, "Landscape Character Assessment Guidance for England and Scotland," prepared for The Countryside Agency and Scottish Natural Heritage, 2002, pp. 30-36.

Table 4 UNITY

Landscape	Rating					Guidance
	High	Moderate to High	Moderate	Low to Moderate	Low	
Rarity	rare			√	common	Are there many examples of this type of landscape in the region?
Diversity	orderly		√		muddled	Is there a recognizable order of the landscape features in view or are there too many patterns overlapping?
Detractors	many			√	few	Are there landscape features out of place?
Distinctiveness	distinct		√		indistinct	Is it easy to remember the landscape? Patterns dramatic or take some finding?
Integrity	whole		√		remnant	What patterns in the landscape are evident? Are sections missing and to what extent?

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 36.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 5 PUBLIC VIEW	
Rating	
High	
	Public view includes areas where the aesthetic value is protected by federal, state, county or city, law, ordinance, regulation, or standard. Public view includes federal, state, county, city designated areas of aesthetic, cultural, and recreational claim, such as: a park, outdoor recreation area, etc.; coastal or forest reserve, open space preserve, urban green space, etc.; scenic overlook, scenic river, scenic trail, etc.; historic building, district, or site; a site having a cultural resource. Public view includes a federal or state designated scenic byway, highway, or road; designated scenic highway or road of regional importance; a segment of travel route, such as a road, rail line, pedestrian and equestrian trail, bicycle path near a designated area of aesthetic claim and leading directly to it. View approaching an area of aesthetic, cultural, and recreational claim that may be closely related to the appreciation of the aesthetic, cultural, and recreational significance at that designation. Public view includes an urban residential use area and segment of road that serves as the primary access route to it.
Moderate	
	Public view includes undesignated but popularly used or appreciated area of aesthetic, cultural, and recreational claim of significance in the region. Public view includes a highway or road locally designated as a scenic route and of importance only to the local population, or informally designated as such in road atlases, road maps, and tour book guides. Public view includes segments of travel routes, such as roads, pedestrian and equestrian trails, bicycle paths that are near and are the primary access to protected or popularly used undesignated areas important for their aesthetic, cultural, or recreational claim. Public view includes a segment of travel route near a designated area of aesthetic claim serving as a secondary access route to the area. Public view includes a rural residential use area and segment of road that serves as the primary access route to it within one mile. Public view includes a maintained religious facility or cemetery.
Low	
✓	Public view includes an agricultural, commercial, industrial, manufacturing, research, and development use area. Public view includes a small aggregation of dwellings.
None	
	No public view.

Adapted from Aspen Environmental Group, "Final Environmental Impact Report Tranquillon Ridge Oil and Gas Development Project" prepared for County of Santa Barbara Planning and Development. Santa Barbara, CA, April 2008, Vol. 1, pp. 5.13-5-6, and "Final Environmental Impact Report Southern California International Gateway Project," Appendix B Aesthetics Visual Resource Methodology, Los Angeles Harbor Department, Los Angeles, CA, March 2013.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 6 VISIBILITY	
Rating	
Dominant Dominates view because project would fill most of visual field for views in its general direction. Stark contrast in form, line, color, texture, luminance, or motion may contribute to view dominance.	An object with strong visual contrast that is of such enormous size that it occupies most of the visual field, and views of it cannot be avoided except by turning the head greater than 45 degrees from a direct view of the object. The object is the major focus of visual attention, and its large apparent size is a major factor in its view dominance. In addition to size, contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of the project detracts noticeably from views of other landscape components.
High Strongly attracts visual attention of views in general direction of project. Attention may be drawn by stark contrast in form, line, color, or texture, luminance, or motion.	An object that is not of large size, but contrasts with the surrounding landscape components so strongly that it is a major focus of visual attention, drawing viewer attention immediately, and tending to hold viewer attention. In addition to stark contrast in form, line, color, and texture, bright light sources, and moving objects associated with the project may contribute substantially to drawing viewer attention. The visual prominence of project interferes noticeably with views of nearby landscape components.
Moderate to High Plainly visible, could not be missed by casual observer, but does not strongly attract visual attention, or dominate view because of apparent size, for views in general direction of project.	An object that is obvious and with enough size or contrast to compete with other landscape components, but with insufficient visual contrast to strongly attract visual attention and insufficient size to occupy most of the observer's visual field.
Moderate Visible after brief glance in general direction of project and unlikely to be missed by casual observer.	An object that can be easily detected after a brief look and would be visible to most casual observers, but without enough size or contrast to compete with major landscape components.
Low to Moderate Visible when scanning in general direction of project; otherwise, likely to be missed by casual observer.	An object that is very small and/or faint, but when the observer is scanning the horizon or looking more closely at an area can be detected without extended viewing. A casual observer could sometimes notice it; however, most people would not notice it without some active looking.
Low Visible only after extended, close viewing; otherwise, invisible.	An object that is near the extreme limit of visibility. A person who was not aware of it in advance and looking for it could not see it. Even under those circumstances, the object can only be seen after looking at it closely for an extended period.
Adapted from R.G. Sullivan, L.B. Kirchler, T. Lahti, S. Roche, K. Beckman, B. Cantwell, P. Richmond, "Wind Turbine Visibility and Visual Impact Threshold Distances in Western Landscapes," University of Chicago Argonne, LLC submitted to the National Association of Environmental Professionals 37th Annual Conference Proceedings, Portland, Oregon, May 21-24, 2012, p. 17.	

KOP 6 Full Evaluation Worksheets (cont'd)

Table 7 BASIC DESIGN ELEMENT CONTRAST

Element	Rating[1]	Weight	Points	
Color	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 3	**3**	Color is "the light-reflecting qualities of a project's surface (for example, dark or light, blue or gray) in relation to background colors."[2] "Colors that harmonize well seem to belong together and produce pleasing visual effects. Colors that do not harmonize are disturbing to the viewer."[3] Contrast in color depends on the exterior surface degree of lightness or darkness, gradation or variety of a color, the degree of saturation or brilliance of a color in the project to those that continue to exist in the landscape.
Form	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 2	**2**	Form is "the configuration and outline of the project in terms of masses, patterns, and linear elements. For example, a structure may have a bulky, vertical, geometric silhouette which contrasts with an irregular horizontal landscape of rolling hills."[4] Forms exist in three dimensions (height, length, width). For example, the shape is a square its form is a cube. Forms that are bold, regular, solid, or vertical tend to prevail in the landscape. Contrast in form depends on how alike the form(s) of the project is to those that continue to exist in the landscape.
Line	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	"Line is the path, real or imagined that the eye follows when perceiving abrupt differences when objects are aligned in a one-dimensional sequence."[5] "Line in the landscape is created by the edge between two materials, the outline or silhouette of a form, or a long linear feature."[6] Properties of lines: straight, diagonal, curved, vertical, horizontal. Contrast in line depends on edge types and interruption, or introduction of edges, bands, and silhouette lines in the project to those that continue to exist in the landscape.
Texture	Strong = 3 Moderate = 2 **Weak = 1** None = 0	x 1	**1**	Texture is "the aggregation of small forms or color mixtures into a continuous surface pattern; the aggregated parts are enough that they do not appear as discrete objects in the composition of the scene."[7] "Details of the surface pattern, as in smooth polished metal surfaces versus the rough, uneven textures of the foliage of trees and bushes"[8] Contrast in texture depends on the relative dimensions of the surface variations from large to small, spacing of surface variations, and the degree of uniform recurrence and symmetrical arrangement of the surface variation in the project to those that continue to exist in the landscape.
	Overall Rating[9]		**+7**	
	Maximum 21 points			

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, CA, 1979.

[1] **Strong** — the project contrast demands attention will not be overlooked and is dominant in the landscape. **Moderate** — the project contrast begins to attract attention and begins to dominate the characteristic landscape. **Weak** — the project contrast can be seen but does not attract attention. **None** — the project contrast is not visible or perceived. (U.S. Department of Interior Bureau of Land Management Manual 8431-Visual Resources Contrast Rating, January 17, 1986.)

[2] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[3] U.S. Department of Transportation Federal Highway Administration, "A Guide to Visual Quality in Noise Barrier Design," Chapter 3. Visual Design Principles, n.d.

[4] Sheppard, p. 46.

[5] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[6] Gail Hansen, "Basic Principles of Landscape Design." Florida Cooperative Extension Service Institute of Food and Agricultural Science, University of Florida, Gainesville, Florida, July 2010.

[7] U.S. Department of Interior Bureau of Land Management Manual 8431-1 Visual Resources Contrast Rating, January 17, 1986.

[8] Sheppard, p. 47.

[9] Overall Rating is for descriptive purpose: Strong — 1-3 ratings Strong or 3 ratings Moderate; Moderate — 1-2 ratings Moderate with no higher ratings; Weak — 1-3 ratings Weak with no higher ratings; None — all ratings None.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 8 SCALE DOMINANCE			
Rating			**Points**
Dominant	The project is the major object in the landscape and occupies a large part of the landscape.		12
Codominant	The project is one of the major objects in the landscape or is the major object or area in a panoramic landscape.		8
Subordinate	The project is of significant size but occupies a minor part of the landscape.		4
Insignificant	**The project is a small object occupying an exceedingly small area in the landscape.**		**0**
	Single highest points	Maximum 12 points	**0**
Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.			

KOP 6 Full Evaluation Worksheets (cont'd)

Table 9 SPATIAL DOMINANCE

Category				Single Highest Rating
Spatial composition of the landscape	"[T]he arrangement of objects and voids in the landscape can be categorized by their spatial composition .... Some compositions, especially those which are distinctly focal, enclosed, or feature-oriented, are more vulnerable to modifications than others, depending upon how strongly the spatial configuration draws the eye to certain locations."[1]			Dominant 2-3 categories rated prominent = 6 points Codominant 1 category rated prominent, or 2 categories rated significant = 4 points Subordinate 1 category rated significant = 2 points **Insignificant** All categories rated inconspicuous = 0 points
	Rating	**Description**		
	prominent	Feature[2], Focal[2], or Enclosed[2] landscape.		
	significant	Panoramic,[2] or weak focal, feature or enclosed landscape.		
	inconspicuous	Canopied,[2] indistinct or obscured landscape.		
Spatial position of the project	"Spatial position of the project in relation to the three-dimensional arrangement of objects and voids in the landscape. Important spatial aspects of the project include relationship to the skyline, location in topographic spaces such as focal valleys or broad plains, and position with regard to streetscapes and architectural arrangements."[3]			
	Rating	**Description**		
	prominent	High Level,[4] High Slope,[4] Interfluve[4]		
	significant	Low Level,[4] Lowslope,[4] Midslope[4]		
	inconspicuous	Basin Floor,[4] Footslope,[4] Toeslope[4]		
Backdrop to the project	"[T]he backdrop against which an object is seen affects its visual contrast. Modifications seen against the sky or water are usually more prominent than against a land backdrop."[5]			
	Rating	**Description**		
	prominent	All or a significant part of the project will be seen against sky or water.		
	inconspicuous	All or a significant part of the project will be seen against land.		
		Single highest points	Maximum 6 points	**0**

Adapted from R.C. Smardon, Donald Appleyard, "Prototype Visual Impact Assessment Manual," Pacific Southwest Forest and Range Experiment Station, Berkeley, California, 1979.

[1] U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.

[2] **Canopied** — landscape where features overhead (above eye level) create a canopy or ceiling. **Enclosed** — a space, large or small surrounded by continuous grouping of objects creating walls and floor. It may have a large vertical dimension, but typically a restricted horizontal one. **Feature** — landscape dominated by a feature or a group of objects in the distance to which the eye is drawn. **Focal** — converging lines in the landscape or progressions of aligned objects lead the eye to a focal point in the landscape. **Panoramic** — a broad horizontal composition. Little or no sense of boundary restriction; no apparent limit to the view. Foreground or middle ground objects do not substantially block viewing of background objects. (U.S. Department of Interior Bureau of Land Management Manual H-8431-1 Visual Resources Contrast Rating, January 17, 1986.)

[3] Stephen R.J. Sheppard, *Visual Simulation A User's Guide For Architects, Engineers, And Planners*, Van Nostrand Reinhold, New York, 1989, p. 46.

[4] **Basin Floor** — nearly level to gently sloping, bottom surface of an intermontane basin. **Footslope** — the gently inclined hillslope at the foot of a hill. **High Level** — level top of plateau. **High Slope** — geomorphic component that forms the uppermost inclined surface at the top of a slope (e.g., shoulder slope, upper slope). **Interfluve** — linear top of ridge, hill, or mountain. **Low Level** — valley floor, or shoreline representing the former position of an alluvial plain, lake, or shore. **Lowslope** — inner gently inclined surface at the base of a slope. Surface profile is generally concave and a transition between midslope or backslope, and toeslope. **Midslope** — intermediate slope position between high and low (e.g., middle slope). (Adapted from T. Liang [1951]; J.B. Dalrymple, R.J. Blong, and A. Conacher. [1968]) **Toeslope** — the gently inclined surface at the base of a hillslope. Toeslope in profile are commonly gentle and linear and are constructional surfaces forming the lower part of a hillslope continuum that grades to valley or closed-depression floors. (USDA Soil Survey Manual Handbook No. 18, issued March 2017 as amended February 2018).

[5] U.S. Department of Interior Bureau of Land Management Manual H-8431-1.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 11 CAPABILITY							
Category	For each category check (√) the rating that best describes the existing landscape.						
		Rating					
		High		Moderate		Low	
Topography		High amount of topographic diversity and variety.		Moderate amount of topographic diversity and variety.	√	Low amount of topographic diversity and variety.	
Land Use Pattern	If project in rural landscape	Small natural or vegetated areas. Man-made structures dominant in the view.		Natural areas of local significance. Man-made structures widespread but not dominant in the view.	√	Remote natural areas of regional significance. Man-made structures and features limited and scattered.	
	If project in urban landscape	Developed areas including commercial development. Large-scale infrastructure or structures may be common and more dominant.		Suburban or mostly developed areas with components of local importance. Large-scale infrastructure or structures may be visible but not dominant.		Clustered development surrounded by rural scattered development. Large-scale infrastructure or structures limited and scattered.	
Visual Variety		Landscape exhibits a high degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit high degree of variety in landforms and vegetation.		Landscape exhibits a moderate degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit moderate variety in landforms and vegetation.	√	Landscape exhibits a low degree of visual variety in terms of the landscape's basic elements of form, line, color, and texture may also exhibit minimal variety in landforms and vegetation.	
Major Focal Points or Features		Focal points or features in the viewshed that are either natural or man-made, commonly found, minimal local importance/value, or contribute little to the character of the landscape or are indistinct.	√	Focal points or features in the viewshed that are either natural or man-made, somewhat commonly found, local importance/value, or make a minor contribution to the character of the landscape.		Focal points or features in the viewshed that are either natural or man-made and are unusual or rare, regional importance/value, or make a major contribution to the character of the landscape or are somewhat distinctive.	

Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 17, and L. Blocker, T. Slider, J. Ruchman, J. Mosier, L. Kok, J. Silbemagle, J. Beard, D. Wagner, G. Brogan, D. Jones, N. Laughlinn, L. Anderson, "Landscape Aesthetic (AH 701-i) - Visual Absorption Capability (Appendix C)," United States Department of Agriculture Forest Service, 1995, pp. C-1-C-8.

KOP 6 Full Evaluation Worksheets (cont'd)

Table 12 ABSORPTION	
For each question circle the applicable rating for the absorption of the landscape; High = H, Moderate = M, Low = L.	
Exposure	**Rating**
What is the level of exposure of the project in the landscape? The higher the level of exposure, the lower the absorption.	(H) M L
What is the intensity of the observation of the project? The more the project is observed from certain intensive land uses the lower its absorption (e.g., view from a densely populated residential area versus a heavy manufacturing and processing area).	(H) M L
What is the view distance to the project? The farther the viewing distance to the project from the vantage point the lower its exposure the higher its absorption. Is the project more than three miles away?	(H) M L
What is the project's distance from an urban skyline or a natural skyline (e.g., high-rise buildings or a mountain range against a backdrop of sky)? The closer the project is to an urban or natural skyline the lower its absorption.	(H) M L
What is the project's topographic position in the landscape? As the project's position increases its absorption decreases (e.g., toeslope to summit).	(H) M L
Focal Point	
Is the project near a focal point in the landscape? A focal point is a converging of lines in the landscape or progressions of aligned objects that lead the eye to a point. A focal point gives the viewer something interesting to look at in the view. The closer the project is to a focal point the greater viewer scrutiny the lower the absorption.	(H) M L
Does the edge(s) in the landscape have a diverse background but have the propensity to become a focal point? An edge is a transitional linear place where one space or landscape becomes part of another. An edge has a high absorption due to a diverse background, a low absorption due to the propensity to become a focal point (e.g., city meets country, a woodland edge, an alpine tree line, coastline).	H (M) L
Trees & Vegetation	
Are trees and vegetation in the landscape missing, deficient, or uniform? The greater the density of trees and vegetation, the greater the coverage, the greater the capacity of an area to absorb physical change.	(H) M L
What is the type(s) of tree(s) and vegetation in the landscape? Tree and vegetation types vary the absorption of the physical change. A uniformly tall, dense stand of trees has screening ability. Vegetation types such as evergreen shrubs and similar have greater absorption than dwarf shrubs, ornamental grasses, and grass-like plants. Trees and vegetation can provide high absorption in the foreground but lower absorption in the background.	(H) M L
Disturbed Surface Area	
Period of time to restore the project's disturbed surface area to its pre-construction activity condition? The longer the time to restore the disturbed area to its undisturbed original condition after the construction phase the lower the absorption; 1 year = high, 2 to 3 years = moderate, 3 years or more = low.	(H) M L
Adapted from S. Amir, E. Gidalizon, "Expert-based method for the evaluation of visual absorption capacity of the landscape*," Journal of Environmental Management, 1990, Vol. 30, pp. 251-263, and W.C. Yeomans, "A Proposed Biophysical Approach to Visual Absorption Capability (VAC),[1]" Pacific Southwest Forest and Range Experimental Station, Berkeley, California, 1979 submitted to the National Conference on Applied Techniques for Analysis and Management of Visual Resource, Incline Village, Nevada, April 23-25, 1979, pp. 172-181.	

KOP 6 Full Evaluation Worksheets (cont'd)

Table 13 MAGNITUDE OF CHANGE				
Dominant	**Prominent**	**Conspicuous**	**Apparent**	**Unobtrusive**
Project commands or controls the view in the landscape.	Project stands out or is striking in the view in the landscape.	Project is clearly visible and noticeable within the view in the landscape.	Project visible or evident within the view in the landscape.	**Project indistinct or not obvious within the view in the landscape.**
Project causes a very large alteration to the landscape or features within the landscape such that there is a fundamental change from the existing physical condition.	Project causes a large alteration to the landscape or features within the landscape such that there is an unmistakable change from the existing physical condition.	Project causes a moderate alteration to the landscape or features within the landscape such that there is a distinct change from the existing physical condition.	Project causes a small alteration to the landscape or features within the landscape such that there is a perceptible change from the existing physical condition.	Project causes a very small alteration to the landscape, or features within the landscape such that there is a de minimis change from the existing physical condition.
Adapted from Cape Cod Commission Technical Bulletin #12-001: Visual Impact Assessment Methodology for Offshore Development, Cape Cod Commission, Barnstable, Massachusetts, May 10, 2012, p. 20.				

Table 14 VISUAL CHARACTER OR QUALITY OF PUBLIC VIEW OF SITE AND ITS SURROUNDINGS

Landscape		Project Prominence		Visual Absorption Capability	Magnitude Of Change		CEQA Guidelines Level of Effect On The Environment (See Table 15)
Table	**Rating**	**Rating**		**Rating**			
Landscape Character	See Table 3	Severe		**High**	Dominant		Significant Effect
Unity	Table 4 **(Moderate)**	Strong			Prominent		
Public View	**Low**	Moderate		Moderate	Conspicuous		
Visibility	**Low**	Weak			Apparent		
		Negligible	√	Low	**Unobtrusive**	√	**Less Than Significant Effect**

KOP 6 Full Evaluation Worksheets (cont'd)

Table 15 CEQA GUIDELINES LEVEL OF EFFECT ON THE ENVIRONMENT
Significant Effect on the Environment "means a substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including land, air, water, minerals, flora, fauna, ambient noise, and objects of historic and aesthetic significance." (14 CCR § 15382) (Pub. Res. Code § 21060.5, 14 CCR § 15360) The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, noncompliance with which means the effect will normally be determined to be significant by the [lead] agency…." (14 CCR § 15064.7[a]) **Less Than Significant Effect with Mitigation Incorporated**. The physical change by the proposed project to the existing physical condition reaches the threshold of significance, "… but (1) revisions in the project plans or proposals made by, or agreed to by, the applicant before the proposed [CEQA environmental document (e.g., Negative Declaration) is] released for public review would avoid the effects or mitigate the effects to a point where clearly no significant effect on the environment would occur, and (2) there is no substantial evidence in light of the whole record before the public agency that the project, as revised, may have a significant effect on the environment." (Pub. Res. Code § 21064.5, 14 CCR § 15369.5) (Pub. Res. Code § 21002) **Less Than Significant Effect**. The physical change by the proposed project to the existing physical condition does not reach the threshold of significance "an identifiable, quantitative, qualitative or performance level of a particular environmental effect, … compliance with which means the effect normally will be determined to be less than significant." (14 CCR § 15064.7[a])

Appendix 5.15A

Preliminary Vegetative Landscape Screening Plan

REVISIONS
DESCRIPTION | DATE | MADE BY

IRRIGATION PROGRAM

DETAIL REFERENCE	PLAN VIEW SYMBOL	APPURTENANCE	MODEL NUMBER	MANUFACTURER/ NOTES
1/I-1	C	WATER TRUCK CAM COUPLER, POINT OF CONNECTION	RAGCO PF40C 64544000, OR EQUAL	CAM COUPLER, STAINLESS STEEL, 4" SIZE, RAGCO PRODUCTS AVAILABLE THROUGH CAPITOL RUBBER AND GASKET, SACRAMENTO (800) 662-1800.
2/I-1	— —	SUPPLY LINE PIPE		NON-POTABLE WATER IRRIGATION SUPPLY LINE, SCH 40 PVC PURPLE PIPE, SIZE PER CHART, 12" MINIMUM BURIAL, INSTALL PER SPECIFICATIONS. INSTALL THRUST BLOCKS ON LINES 3" AND LARGER, SEE DETAIL 2, THIS SHEET.
2/I-1	NOT SHOWN	SUPPLY LINE TUBING	RAINBIRD XBS, OR EQUAL	NON-POTABLE WATER IRRIGATION SUPPLY LINE, BLANK TUBING EXTRUDED FROM POLYETHYLENE, SIZE PER CHART, 12" MINIMUM BURIAL, INSTALL PER SPECIFICATIONS
3/I-1	NOT SHOWN	FLEXIBLE RISER	RAINBIRD PFR, PFR-FRA, HUNTER IH-RISER-XX-R, OR EQUAL	PRE-ASSEMBLED FLEXIBLE RISER FOR CONNECTING DRIP EMITTER TO SUPPLY LINE, WITH NON-POTABLE WATER FITTINGS, INSTALL SO EMITTER IS LOCATED 3" ABOVE AND OVER THE TOP OF THE ROOTBALL AND PER SPECIFICATIONS
2/I-1	- - - - -	SLEEVING		NEW SLEEVE UNDER DRIVEWAY, EXTEND 1' BEYOND EACH SIDE OF PAVEMENT, INSTALL SCHEDULE 40 PVC PIPE, SIZE SHALL BE TWICE THE DIAMETER OF PIPE BEING RECEIVED BY SLEEVE
PER MANUFACTURER	NOT SHOWN	AIR RELIEF VALVE	RAINBIRD ARV050, OR EQUAL	AIR RELIEF VALVE AT HIGH POINT IN LINE, UTILIZE MINIMUM ONE ARV FOR EVERY 6.5 GPM (390 GPH) OF FLOW. THIS PROJECT WILL REQUIRE A MINIMUM OF 57 ARVs (19 FOR EACH ZONE). INSTALL INSIDE 9" PURPLE SUBTERRANEAN EMITTER BOX
PER MANUFACTURER	NOT SHOWN	FLUSH VALVE	HUNTER AFV-T, OR EQUAL	FLUSH VALVE AT END OF EACH SUPPLY LINE TUBE. INSTALL INSIDE 9" PURPLE SUBTERRANEAN EMITTER BOX.
3/I-1	NOT SHOWN	DRIP EMITTER	RAINBIRD PC-T-05-1032, HUNTER HE-050-T, OR EQUAL	1/2" PRESSURE COMPENSATING 5 GPH THREADED DRIP EMITTER, 5 PER TREE, 1 PER ALL OTHER PLANTS, INSTALL ON THREADED END OF FLEXIBLE HOSE OR PVC RISER, 4' MAXIMUM LENGTH FROM LATERAL SUPPLY LINE.

SUPPLY LINE PIPE (PVC SCH 40 PURPLE) SIZING CHART

NUMBER OF EMITTERS (5 GPH)	1-84	84-168	167-264	265-360	361-600	601-780	781-1320	1321-2160
PIPE SIZE	3/4"	1"	1-1/4"	1-1/2"	2"	2-1/2"	3"	4"

SUPPLY LINE TUBING (POLYETHYLENE) SIZING CHART

NUMBER OF EMITTERS (5 GPH)	1-48	49-90						
TUBING SIZE	1/2"	3/4"						

IRRIGATION SCHEDULE -- NORTH ZONE

IRRIGATION ZONE	WATER TRUCK TANK SIZE (GALLONS)	SYSTEM FLOW RATE (GPM)	WATERING INTERVAL: DAYS PER WEEK / TRUCK					
			NOV - FEB	MAR	APR, OCT	MAY, JUN, AUG	JUL	SEP
NORTH	2,000	123	1	3	4	6	7	5

WATER USE IS ANTICIPATED TO BE APPROXIMATELY 332,180 GALLONS/YEAR (APRIL-OCTOBER)

IRRIGATION SCHEDULE -- CENTRAL ZONE

IRRIGATION ZONE	WATER TRUCK TANK SIZE (GALLONS)	SYSTEM FLOW RATE (GPM)	WATERING INTERVAL: DAYS PER WEEK / TRUCK					
			NOV - FEB	MAR	APR, OCT	MAY, SEP	JUN, JUL	AUG
CENTRAL	2,000	121	1	3	4	5	7	6

WATER USE IS ANTICIPATED TO BE APPROXIMATELY 331,880 GALLONS/YEAR (APRIL-OCTOBER)

IRRIGATION SCHEDULE -- SOUTH ZONE

IRRIGATION ZONE	WATER TRUCK TANK SIZE (GALLONS)	SYSTEM FLOW RATE (GPM)	WATERING INTERVAL: DAYS PER WEEK / TRUCK					
			NOV - FEB	MAR	APR, OCT	MAY, SEP	JUN, JUL	AUG
CENTRAL	2,000	120	1	3	4	5	7	6

WATER USE IS ANTICIPATED TO BE APPROXIMATELY 331,880 GALLONS/YEAR (APRIL-OCTOBER)

IRRIGATION SCHEDULE NOTES

1. THIS PROJECT WILL BE WATERED BY A WATER TRUCK THAT WILL ATTACH TO A CAM COUPLING. THE PROJECT DESIGN ASSUMES A 2,000 GALLON TANK WATER TRUCK AND IS DESIGNED FOR A MAXIMUM 50 PSI AT THE POINT OF CONNECTION. THE FLOW OF THE PIPE AT THE NORTH POINT OF CONNECTION IS 123.33 GPM, AT THE CENTRAL POINT OF CONNECTION IS 121.0 GPM, AND AT THE SOUTH POINT OF CONNECTION IS 119.75 GPM. FOR ALL THREE ZONES, A 2,000 GALLON TANK WOULD BE EMPTIED IN ABOUT 16-17 MINUTES.
2. WATERING TIMES ARE BASED ON DAILY APPLICATION RATES (IN INCHES) BASED ON AVERAGE EVAPOTRANSPIRATION RATES FOR VACAVILLE/DIXON; DUE TO UNFORESEEN SITE CONDITIONS AND WEATHER, THE IRRIGATION SYSTEM RUN TIME MAY NEED TO BE ADJUSTED AS NECESSARY TO ENSURE THAT PROPER MOISTURE IS MAINTAINED IN THE LANDSCAPE.
3. THE IRRIGATION SCHEDULE SHALL BE SCALED BACK BY 20% - 30% EACH YEAR OVER THE 3 YEAR ESTABLISHMENT PERIOD TO ALLOW FOR COMPLETE SHUTOFF OF IRRIGATION BY YEAR 3-5. PLANTS SHALL BE OBSERVED FOR DROUGHT STRESS MULTIPLE TIMES DURING THE IRRIGATION SEASON AFTER REDUCTION IN APPLIED WATER. SHOULD DROUGHT STRESS BE OBSERVED, THE IRRIGATION SCHEDULE SHALL BE ADJUSTED ACCORDINGLY.

EMITTER QUANTITIES (SEE PLANTING PLANS)

PLANT TYPE	QUANTITY OF EMITTERS
TREE	5
SHRUB	1
HERBACEOUS	1

WATER EFFICIENT LANDSCAPE WORKSHEET

This worksheet is filled out by the project applicant and it is a required element of the Landscape Documentation Package.

Reference Evapotranspiration (ETo) 52.1

Hydrozone # /Planting Description[a]	Plant Factor (PF)	Irrigation Method[b]	Irrigation Efficiency (IE)[c]	ETAF (PF/IE)	Landscape Area (sq.ft.)	ETAF x Area	Estimated Total Water Use (ETWU)[d]
Regular Landscape Areas							
North Irrigation Zone	0.30	drip	0.81	0.37	29,788	11,033	356,375
Central Irrigation Zone	0.30	drip	0.81	0.37	28,904	10,705	345,799
South Irrigation Zone	0.30	drip	0.81	0.37	28,950	10,722	346,349
				Totals	87,642	32,460	1,048,523
Special Landscape Areas							
				Totals	0	0	0
						ETWU Total	1,048,523
						Maximum Allowed Water Allowance (MAWA)[e]	1,273,955

[a] ***Hydrozone #/Planting Description***
E.g.
1.) high water use
2.) low water use
3.) moderate water use

[b] ***Irrigation Method***
overhead spray
or drip

[c] ***Irrigation Efficiency***
0.75 for spray head
0.81 for drip

[d] ***ETWU*** **(Annual Gallons Required)**
Eto x 0.62 x ETAF x Area

[e] ***MAWA (Annual Gallons Allowed)***
(Eto) (.062) [(ETAF x LA) + ((1-ETAF) x SLA)]

ETAF CALCULATION

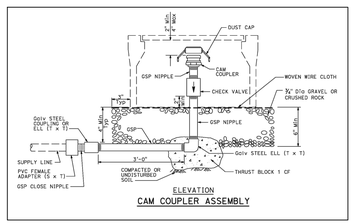
Regular Landscape Areas

Total ETAF X Area	32,460
Total Area	87,642
Average ETAF	**0.37**

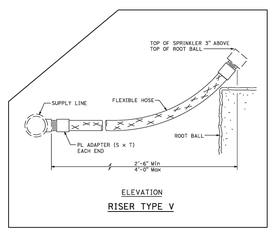
Average ETAF for Regular Landscape Areas must be 0.55 or below for residential areas, and 0.45 or below for non-residential areas.

All Landscape Areas

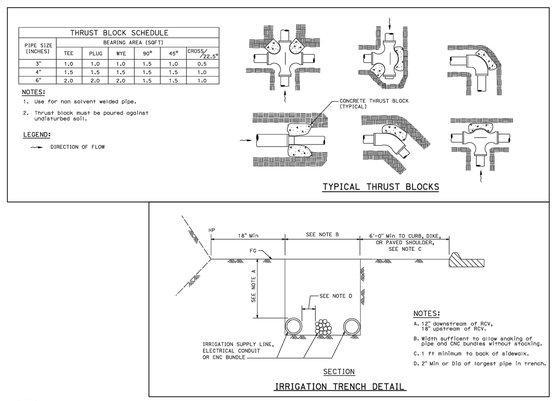
Total ETAF X Area	32,460
Total Area	87,642
Sitewide ETAF	**0.37**



1 / I-1 **CAM COUPLER ASSEMBLY**
NOT TO SCALE



3 / I-1 **EMITTER AND RISER**
NOT TO SCALE



2 / I-1 **IRRIGATION THRUST BLOCKS & TRENCHING**
NOT TO SCALE

DRAFT - NOT FOR CONSTRUCTION

LANDSCAPE ARCHITECT:
P. WELLER

GENERAL IRRIGATION NOTES

1. SEE TECHNICAL SPECIFICATIONS AND GENERAL NOTES FOR ADDITIONAL INFORMATION TO CONSIDER IN IRRIGATION SYSTEM INSTALLATION INCLUDING INFRASTRUCTURE AND UTILITIES PROTECTION AND REPAIR INFORMATION.
2. IRRIGATION MAINLINE AND EQUIPMENT ARE SHOWN DIAGRAMMATICALLY TO CONVEY INSTALLATION INTENT WITH GRAPHIC CLARITY. THE CONTRACTOR SHALL NOT INSTALL THE IRRIGATION SYSTEM AS DIAGRAMMATICALLY SHOWN IF OBSTRUCTIONS, INFRASTRUCTURE, GRADE CHANGES, OR OTHER BARRIERS EXIST IN THE FIELD THAT MIGHT NOT HAVE BEEN FORESEEN, CONSIDERED, OR IN EXISTENCE DURING IRRIGATION DESIGN. NOTIFY OWNER'S REPRESENTATIVE IF THE INSTALLATION OF THE SYSTEM IS NOT FEASIBLE AS DIAGRAMMATICALLY SHOWN PRIOR TO PROCEEDING. IF CONFLICTS ARE NOT REPORTED TO THE OWNER'S REPRESENTATIVE, THE CONTRACTOR SHALL ASSUME FULL RESPONSIBILITY FOR ANY NECESSARY CHANGES REQUIRED TO MAKE THE SYSTEM FULLY FUNCTIONAL AT NO ADDITIONAL COST TO OWNER.
3. THIS IRRIGATION SYSTEM IS DESIGNED TO UTILIZE A WATER TRUCK AS THE POINT OF CONNECTION. SEE IRRIGATION SCHEDULE NOTES.
4. CONTRACTOR SHALL VERIFY LOCATIONS OF EXISTING UTILITIES PRIOR TO CONSTRUCTION.
5. FOLLOW ALL LOCAL CODES WHEN INSTALLING IRRIGATION SYSTEM. FOLLOW MANUFACTURER'S SPECIFICATIONS DURING INSTALLATION. NOTIFY OWNER'S REPRESENTATIVE OF ANY CODE CONFLICTS WITH THE DESIGN PRIOR TO STARTING WORK.
6. ALL MATERIALS AND EQUIPMENT SHALL BE NEW. THE CONTRACTOR SHALL INSTALL MATERIALS AND EQUIPMENT TO PROVIDE THE MOST EFFICIENT AND OPTIMUM OPERATING SYSTEM. FIELD ADJUSTMENTS MAY BE REQUIRED.
7. THE CONTRACTOR SHALL USE COMMON TRENCHES WHEREVER POSSIBLE. COMMON TRENCHES SHALL BE LOCATED WITHIN IRRIGATED AREAS WHEREVER POSSIBLE. TRENCHES SHALL BE LOCATED ALONG FENCES, EDGES OF DRIVEWAYS, OR TOPS OF DITCHES. TRENCHES SHALL BE LOCATED 12" FROM SIDEWALKS, TRAILS, OR WALLS UNLESS NOTED OTHERWISE.
8. CONTRACTOR SHALL PRESSURE AND LEAK TEST IRRIGATION LINES PRIOR TO BACKFILLING TRENCHES. THE CONTRACTOR SHALL MAKE ANY ADJUSTMENTS REQUIRED TO SYSTEM TO ENSURE OPERABILITY PRIOR TO BACKFILLING TRENCHES.
9. SLEEVES SHALL BE INSTALLED UNDER ENTRYWAY DRIVEWAYS PRIOR TO DRIVEWAY CONSTRUCTION. IN THE EVENT SLEEVES ARE NOT INSTALLED CORRECTLY AND DAMAGE OCCURS TO THE DRIVEWAY, CONTRACTOR WILL BE RESPONSIBLE FOR ADDITIONAL WORK REQUIRED TO MITIGATE THE DAMAGE AT NO ADDITIONAL COST TO OWNER.
10. ALL IRRIGATION COMPONENTS SHALL BE PURPLE IN COLOR WHEN AVAILABLE. THE CONTRACTOR SHALL INFORM THE LANDSCAPE CONSTRUCTION INSPECTOR IF PURPLE-COLORED COMPONENTS ARE NOT AVAILABLE PRIOR TO PURCHASING AND INSTALLING COMPONENTS.
11. THE CONTRACTOR SHALL WARRANTY ALL IRRIGATION WORK FOR A PERIOD OF 1 YEAR.
12. PRIOR TO TRENCHING, CALL UNDERGROUND SERVICE ALERT, (800) 642-2444 FOR NORTHERN CALIFORNIA.
13. THIS CALIFORNIA NATIVE PLANTING PROJECT IS NOT SUBJECT TO THE COUNTY'S WATER EFFICIENT LANDSCAPE ORDINANCE; HOWEVER, THIS DESIGN MEETS THE REQUIREMENTS OF THE MAXIMUM APPLIED WATER ALLOWANCE.

PLANT PROGRAM, NOTES AND DETAILS
P-1

SHEET 1 OF 6

CORBY STREETSCAPE
Vacaville, California

NEXTERA ENERGY RESOURCES
CORBY BATTERY ENERGY STORAGE SYSTEM (BESS)

DRAWN BY: P. WELLER
CHECKED BY: A. MCKEE
FILENAME: CORBY_PL.DWG
PLOTTED BY: WELLER, PAUL
PLOT DATE: 7/10/2024
PLOT TIME: 10:04 AM

KILKENNY ROAD

KILKENNY ROAD

29,788 SF
IRRIGATED
PLANTING AREA
(North Zone)

PROPOSED
SOUND WALL

North Irrigation Zone

North Ir. Zone

Central Irrigation Zone

BYRNES ROAD

2-½"
4"
C
2-½"

14,920 SF
IRRIGATED
PLANTING AREA
(Central Zone)

25' SETBACK

PROJECT
FENCING

2-½"
4"
C

ACCESS ROAD
DRIVEWAY APRON

2-½"

13,984 SF
IRRIGATED
PLANTING AREA
(Central Zone)

24' WIDE ACCESS
ROADS

PROJECT
FENCING

Central Irrigation Zone

South Ir. Zone

15,665 SF
IRRIGATED
PLANTING AREA
(South Zone)

N

MATCHLINE - SEE SHEET I-3

60 0 60 120 180
SCALE OF FEET

DRAFT - NOT FOR CONSTRUCTION

LANDSCAPE ARCHITECT:
P. WELLER

IRRIGATION PLAN

P-2

SHEET 2 OF 6

CORBY STREETSCAPE
Vacaville, CA

NEXTERA ENERGY RESOURCES
CORBY BATTERY ENERGY STORAGE SYSTEM (BESS)

ICF

REVISIONS
DESCRIPTION | DATE | MADE BY

DRAWN BY: P. WELLER
CHECKED BY: A. MCKEE

FILENAME: CORBY_PL.DWG
PLOTTED BY: WELLER, PAUL

PLOT DATE: 7/10/2024
PLOT TIME: 10:05 AM

MATCHLINE - SEE SHEET I-2

South Irrigation Zone

15,665 SF
IRRIGATED
PLANTING AREA
(South Zone)

25' SETBACK

2-½"
4"
C
2-½"

24' WIDE ACCESS
ROADS

BYRNES ROAD

13,284 SF
IRRIGATED
PLANTING AREA
(South Zone)

DRAFT - NOT FOR CONSTRUCTION

N

60 0 60 120 180
SCALE OF FEET

IRRIGATION PLAN CONT.

P-3

REVISIONS
DESCRIPTION
DATE
MADE BY

DRAWN BY: P. WELLER
CHECKED BY: A. MCKEE

FILENAME: CORBY_PL.DWG
PLOTTED BY: WELLER, PAUL

PLOT DATE: 7/10/2024
PLOT TIME: 10:06 AM

LANDSCAPE ARCHITECT:
P. WELLER

SHEET 3 OF 6

CORBY STREETSCAPE
VACAVILLE, CALIFORNIA

NEXTERA ENERGY RESOURCES
CORBY BATTERY ENERGY STORAGE SYSTEM (BESS)

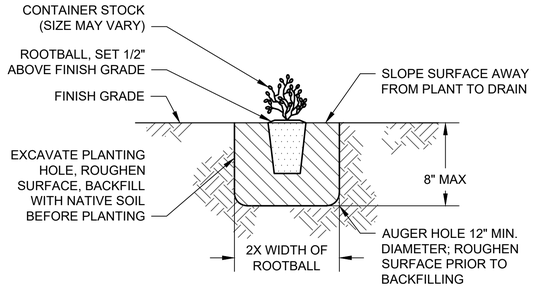
ICF

CORBY PLANT PROGRAM

PLAN VIEW SYMBOL	PLANTING ZONE	DETAIL REFERENCE	SPECIES NAME		AVERAGE PLANT SPACING (FEET ON-CENTER)	WATER USE PER WUCOLS	% OF PLANT PALETTE	EVERGREEN?	PROPAGULE/ CONTAINER SIZE	QUANTITY	GROWTH RATE (FT)	1 YEAR HEIGHT (FT)	5 YEAR HEIGHT (FT)	MATURE HEIGHT (FT)	PLANTING NOTES	TOTAL PLANTING AREA
			BOTANICAL	COMMON												
	TREE	1/P-1	JUGLANS HINDSII	NORTHERN CALIFORNIA BLACK WALNUT	85	MEDIUM	39%	NO	TP4	11	2	1	9	60	JUG HIN	87641 SF
			PLATANUS RACEMOSA	CALIFORNIA SYCAMORE		MEDIUM	25%	NO	TP4	7	3	1	13	80	PLA RAC	
			QUERCUS LOBATA	VALLEY OAK		LOW	36%	NO	TP4	10	2-3	1	9	70	QUE LOB	
	SHRUB	1/P-1	CEANOTHUS OLIGANTHUS	HAIRY CEANOTHUS	10	LOW	10%	YES	1-GAL	88	1	1	5	8-10		
			CERCIS OCCIDENTALIS	WESTERN REDBUD		LOW	5%	NO	1-GAL	44	1-2	1	7	10-20		
			FRANGULA CALIFORNICA	CALIFORNIA COFFEEBERRY		LOW	10%	YES	1-GAL	88	2	1	9	8-15		
			HETEROMELES ARBUTIFOLIA	TOYON		LOW	15%	YES	TP4	132	1-2	1	8	10-20		
			PRUNUS ILICIFOLIA	HOLLY LEAF CHERRY		LOW	5%	YES	1-GAL	44	2	1	9	20		
	HERBACEOUS	2/P-1	ASCLEPIAS FASCICULARIS	NARROW LEAF MILKWEED	8	LOW	10%	YES	DEEPOT	685	1-2	1	1-2	1-2	PLANT IN CLUSTERS OF 5-7, 3-4' O.C. SPACING WITHIN CLUSTERS	
			DIPLACUS AURANTICUS	ORANGE BUSH MONKEY FLOWER		LOW	5%	YES	DEEPOT	345	1-2	1	3	3		
			EPILOBIUM CANUM	CALIFORNIA FUCHSIA		LOW	10%	NO	DEEPOT	685	1-2	1	2-3	2-3		
			ERIOGONUM FASCICULATUM	CALIFORNIA BUCKWHEAT		LOW	10%	YES	DEEPOT	685	1-2	1	1-2	1-2		
			MUHLENBERGIA RIGENS	DEER GRASS		LOW	5%	YES	DEEPOT	345	1-2	1	4	3-4		
			SALVIA SPATHACEA	HUMMINGBIRD SAGE		LOW	10%	YES	DEEPOT	685	1-2	1	1-2	2		
			STIPA PULCHRA	PURPLE NEEDLE GRASS		LOW	5%	YES	DEEPOT	345	1-2	1	1-2	2		

PLANTING PROGRAM NOTES

1. PLANTS INDICATED TO BE INSTALLED IN CLUSTERS MAY BE RANDOMLY PLACED PER THE ENGINEER'S GUIDANCE; TOTAL SPECIES QUANTITIES WILL REMAIN THE SAME.
2. QUANTITIES SHOWN ARE TOTAL INDIVIDUALS, NOT TOTAL CLUSTERS
3. ALL PLANTING LOCATIONS WILL BE PIN FLAGGED PRIOR TO PLANTING USING UNIQUE FLAGS FOR EACH SPECIES.

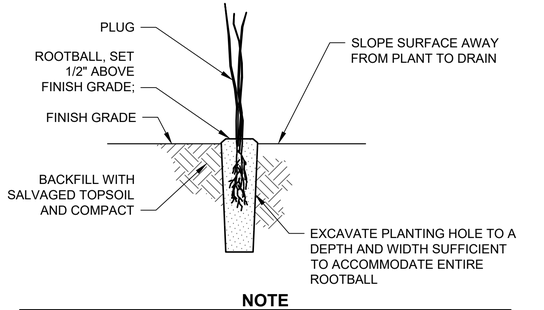


NOTE

1. PROVIDE WEED AND MULCH FREE ZONE AROUND PLANTING SITE ACCORDING TO THE SPECIFICATIONS.

1 / P-1 ***1-GALLON AND TREEPOT 4 PLANTING***

NOT TO SCALE



NOTE

1. PROVIDE WEED AND MULCH FREE ZONE AROUND PLANTING SITE ACCORDING TO THE SPECIFICATIONS.

2 / P-1 ***DEEPOT PLANTING***

NOT TO SCALE

DRAFT - NOT FOR CONSTRUCTION

GENERAL PLANTING NOTES

1. SEE TECHNICAL SPECIFICATIONS AND GENERAL NOTES FOR ADDITIONAL INFORMATION TO CONSIDER IN PLANTING INSTALLATION INCLUDING INFRASTRUCTURE AND UTILITIES PROTECTION AND REPAIR INFORMATION.
2. PLANTS SELECTED ARE CALIFORNIA NATIVE AND SMALLER IN SIZE BECAUSE WATER SERVICE IS NOT AVAILABLE AT THE SITE AND WILL BE TRUCKED IN FOR IRRIGATION PURPOSES. SMALLER PLANT MATERIAL ADAPTED TO SURVIVE WITHOUT IRRIGATION ONCE ESTABLISHED HAS BEEN PROPOSED INSTEAD. THE SMALLER PLANT MATERIAL WILL GROW TO A MATURE SIZE JUST AS QUICKLY.
3. CONTRACTOR SHALL MAINTAIN ALL PLANTING WORK FOR A PERIOD OF 180 CONTINUOUS CALENDAR DAYS (PLANT MAINTENANCE PERIOD). THE 180 DAY MAINTENANCE PERIOD SHALL BEGIN IMMEDIATELY FOLLOWING THE FINAL ACCEPTANCE OF THE INSTALLATION. ALL SITE PREPARATION AND SOIL AMENDMENTS SHALL BE COMPLETED AND APPROVED BY THE RESTORATION ECOLOGIST PRIOR TO INITIATING PLANTING.
4. ALL CONTAINER PLANTS MUST BE PLANTED WITHIN 3 WORKING DAYS FOLLOWING DELIVERY TO THE SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING AND PROTECTING ALL PLANTS AND MATERIALS STORED ON-SITE.
5. PLANTING IS RECOMMENDED FOR OCTOBER AND NOVEMBER. PLANTING SHALL ONLY OCCUR WHEN ENVIRONMENTAL CONDITIONS ARE FAVORABLE FOR SUCH ACTIVITIES, AS DIRECTED BY THE OWNER'S REPRESENTATIVE AND BASED ON STANDARD HORTICULTURAL PRACTICES. PLANTING SHALL NOT TAKE PLACE IF TEMPERATURES ARE UNSEASONABLY HIGH OR IF THE SITE IS EXCESSIVELY WET OR MUDDY.
6. CONTAINER PLANTS SHALL BE PLANTED PER DETAIL(S), AND SHALL BE WATERED IN THOROUGHLY IMMEDIATELY AFTER BEING PLANTED.
7. APPLY 4 INCH LAYER OF MULCH BETWEEN PLANTS THROUGHOUT IRRIGATED PLANTING AREA.
8. PLANT MATERIAL HAS BEEN SELECTED AND IS INTENDED TO SURVIVE WITHOUT SUPPLEMENTAL WATER AFTER A PERIOD OF THREE YEARS OR LESS. THE CONTRACTOR SHALL PROVIDE SUPPLEMENTAL WATER TO PLANTS DURING PERIODS WHERE RAINFALL DOES NOT PROVIDE ADEQUATE WATER FOR PLANTING SUCCESS AND ESTABLISHMENT. SEE IRRIGATION SCHEDULE ON IRRIGATION PLAN. SUPPLEMENTAL WATER SHALL BE PROVIDED FOR A PERIOD OF UP TO THREE YEARS FROM TIME OF PLANTING. THE SUPPLEMENTAL WATER SHALL BE PROVIDED FROM A TEMPORARY IRRIGATION SYSTEM. IF A TEMPORARY IRRIGATION SYSTEM IS SELECTED BY THE OWNER REPRESENTATIVE, THE DESIGN AND INSTALLATION, AND THE EVENTUAL DECOMMISSIONING AND REMOVAL, OF THE SYSTEM WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO THE SATISFACTION OF THE OWNER'S REPRESENTATIVE. THE LOW WATER USE PLANT SELECTION AND APPROACH TO SUPPLEMENTAL WATER SATISFIES THE REQUIREMENTS OF THE STATE OF CALIFORNIA'S MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO).
9. LANDSCAPE PLANTINGS WILL BE MAINTAINED TO ALLOW FOR VISUAL ACCESS FROM ROADWAY TO PREVENT CRIME. THE LANDSCAPE WILL BE MAINTAINED TO ELIMINATE WEEDS, DEBRIS, AND UNDESIRABLE MATERIALS.

PLANT PROGRAM, NOTES AND DETAILS P-1

LANDSCAPE ARCHITECT: P. WELLER

SHEET 4 OF 6

CORBY STREETSCAPE
Vacaville, California

NEXTERA ENERGY RESOURCES
CORBY BATTERY ENERGY STORAGE SYSTEM (BESS)

REVISIONS
DESCRIPTION | DATE | MADE BY

DRAWN BY: P. WELLER
CHECKED BY: A. MCKEE

FILENAME: CORBY_PL.DWG
PLOTTED BY: WELLER, PAUL

PLOT DATE: 7/10/2024
PLOT TIME: 10:06 AM

MATCHLINE - SEE SHEET P-3

PLANTING PLAN

60 0 60 120 180

SCALE OF FEET

P-2

REVISIONS

DESCRIPTION	DATE

DRAWN BY: P. WELLER
CHECKED BY: A. MCKEE

FILENAME: CORBY_PL.DWG
PLOTTED BY: WELLER, PAUL

PLOT DATE: 7/10/2024
PLOT TIME: 10:07 AM

LANDSCAPE ARCHITECT:
P. WELLER

SHEET 5 OF 6

CORBY STREETSCAPE
Vacaville, CA

NEXTERA ENERGY RESOURCES
CORBY BATTERY ENERGY STORAGE SYSTEM (BESS)

MATCHLINE - SEE SHEET P-2

29,650 SF
PLANTING AREA

JUG HIN

25' SETBACK

24' WIDE ACCESS
ROADS

QUE LOB

373'

BYRNES ROAD

13,284 SF
PLANTING AREA

JUG HIN

36'

DRAFT - NOT FOR CONSTRUCTION

N

60 0 60 120 180
SCALE OF FEET

PLANTING PLAN CONT.

P-3

REVISIONS

DESCRIPTION	DATE	MADE BY

DRAWN BY: P. WELLER
CHECKED BY: A. MCKEE

FILENAME: CORBY_PL.DWG
PLOTTED BY: WELLER, PAUL

PLOT DATE: 7/10/2024
PLOT TIME: 10:08 AM

LANDSCAPE ARCHITECT:
P. WELLER

SHEET 6 OF 6

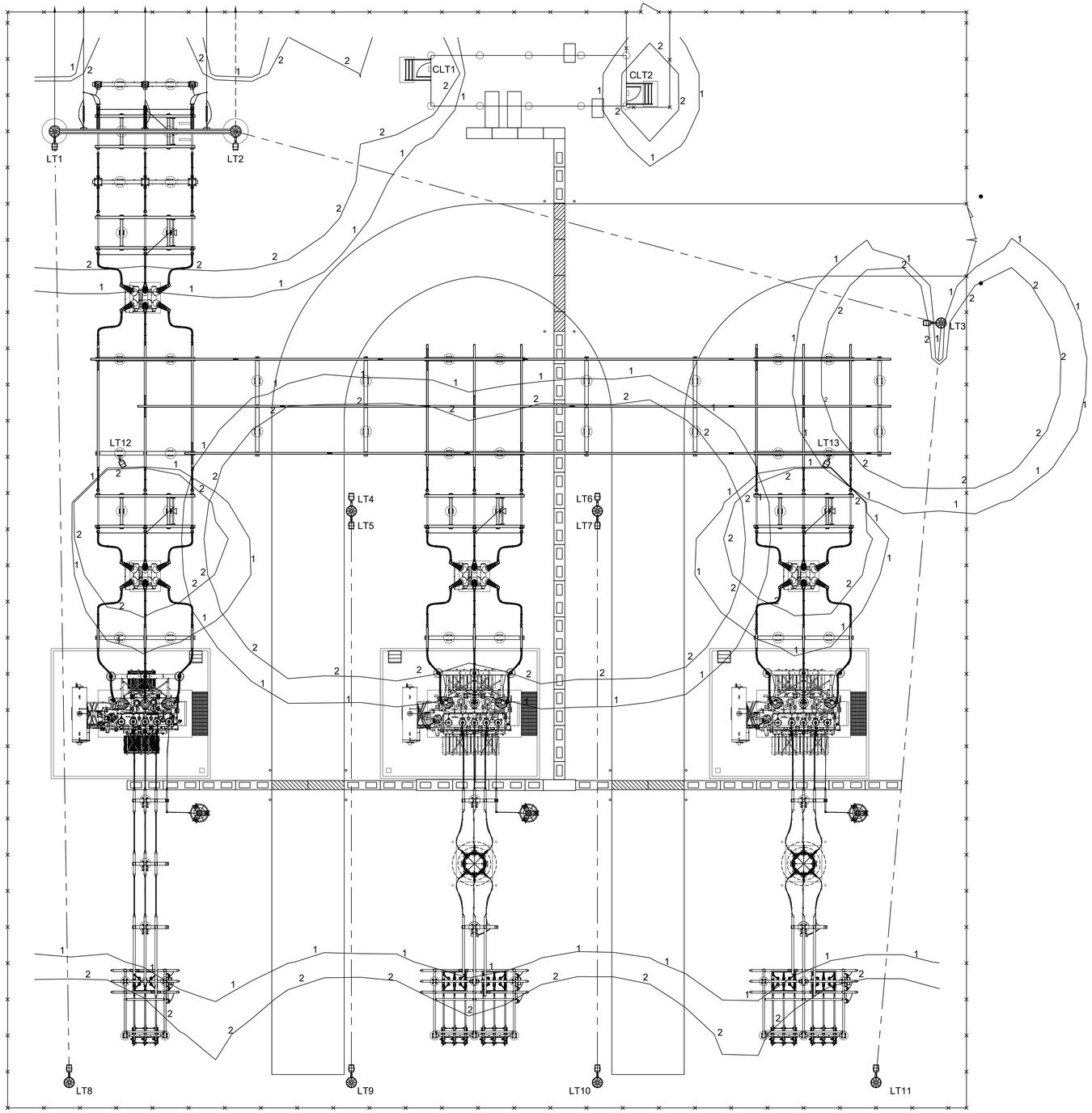
CORBY STREETSCAPE
VACAVILLE, CALIFORNIA

NEXTERA ENERGY RESOURCES
CORBY BATTERY ENERGY STORAGE SYSTEM (BESS)

ICF

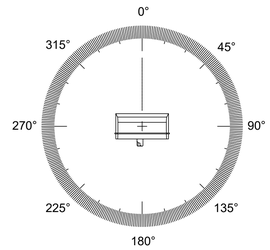
Appendix 5.15B

Preliminary Substation Lighting Plan and Luminaire Specification Sheets

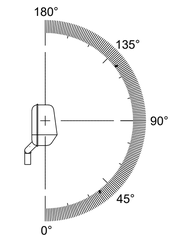


	YARD LIGHTING SCHEDULE				
LIGHT NO.	TYPE	WATTAGE	MOUNTING HGT.	ORIENTATION	TILT
LT1	LITHONIA RSX2 AREA LT	190W	30Ft	180	0
LT2	LITHONIA RSX2 AREA LT	190W	30Ft	180	0
LT3	LITHONIA RSX2 AREA LT	190W	30Ft	180	0
LT4	LITHONIA RSX2 AREA LT	190W	30Ft	0	0
LT5	LITHONIA RSX2 AREA LT	190W	30Ft	180	0
LT6	LITHONIA RSX2 AREA LT	190W	30Ft	0	0
LT7	LITHONIA RSX2 AREA LT	190W	30Ft	180	0
LT8	LITHONIA RSX2 AREA LT	190W	30Ft	0	0
LT9	LITHONIA RSX2 AREA LT	190W	30Ft	0	0
LT10	LITHONIA RSX2 AREA LT	190W	30Ft	0	0
LT11	LITHONIA RSX2 AREA LT	190W	30Ft	0	0
LT12	LITHONIA DSXF2 FLOOD LT	145W	8Ft	150	135
LT13	LITHONIA DSXF2 FLOOD LT	145W	8Ft	210	135
CLT1	GE EVOLVE AREA LT WALL PACK	29W	10Ft	90	0
CLT2	GE EVOLVE AREA LT WALL PACK	29W	10Ft	270	0

NORTH



YARD LIGHT
ORIENTATION ANGLE



YARD LIGHT
TILT

PRELIMINARY
NOT FOR CONSTRUCTION

NOTES

1. FOOT CANDLES SHOWN ARE AT THE 230KV SWITCH BLADE HEIGHT.

REFERENCE DRAWINGS

BCR-P003-01	GENERAL ARRANGEMENT PLAN
BCR-P004-01	GENERAL ARRANGEMENT ELEVATIONS A-A & B-B
BCR-P004-02	GENERAL ARRANGEMENT ELEVATIONS C-C, D-D, & E-E
BCR-P010-01	CONDUIT PLAN
BCR-P010-02	CONDUIT PLAN

NO	DATE	REVISIONS AND RECORD OF ISSUE	DRWN	REV'D	APPR	COMP
--						
--						
--						
--						
--						
--						
--						
A	12/17/2025	ISSUED FOR PERMITTING	SLB	SV	CJM	S&L

SCALE: 1/16" = 1'-0"

0 5' 10' 20'

PREP: -- CHKD: --

APPD: -- DATE: --

CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE; INCLUDING CONTRACTOR'S /INSTALLER'S PERSONNEL (OR THAT OF IT'S SUB-CONTRACTOR(S)) PERFORMING THE WORK.

ANY MODIFICATION OR ADDITION TO THIS DRAWING BY ANY ORGANIZATION OTHER THAN SARGENT & LUNDY IS NOT THE RESPONSIBILITY OF SARGENT & LUNDY.

Sargent & Lundy

55 EAST MONROE ST., CHICAGO, ILL.

CORBY BESS, LLC
CORBY 230/34.5kV SUBSTATION
LIGHTING PLAN

BCR-P010-04

RSX2 LED
Area Luminaire

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

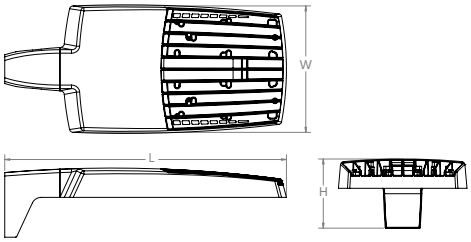
EPA (ft²@0°): 0.69 ft² (0.06 m²)

Length: 29.3" (74.4 cm) (SPA mount)

Width: 13.4" (34.0 cm)

Height: 3.0" (7.6 cm) Main Body 7.2" (18.3 cm) Arm

Weight: (SPA mount) 30.0 lbs (13.6 kg)



Introduction

The new RSX LED Area family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSX2 delivers 11,000 to 31,000 lumens allowing it to replace 250W to 1000W HID luminaires.

The RSX features an integral universal mounting mechanism that allows the luminaire to be mounted on most existing drill hole patterns. This "no-drill" solution provides significant labor savings. An easy-access door on the bottom of mounting arm allows for wiring without opening the electrical compartment. A mast arm adaptor, adjustable integral slipfitter and other mounting configurations are available.

design select

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Design Select options indicated by this color background.

Ordering Information

EXAMPLE: RSX2 LED P6 40K R3 MVOLT SPA DDBXD

RSX2 LED

Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSX2 LED	P1	30K 3000K	R2 Type 2 Wide	MVOLT (120V-277V) [2]	SPA Square pole mounting (3.0" min. SQ pole for 1 at 90°, 3.5" min. SQ pole for 2, 3, 4 at 90°)
	P2	40K 4000K	R3 Type 3 Wide	HVOLT (347V-480V) [3]	RPA Round pole mounting (3.2" min. dia. RND pole for 2, 3, 4 at 90°, 3.0" min. dia. RND pole for 1 at 90°, 2 at 180°, 3 at 120°)
	P3	50K 5000K	R3S Type 3 Short	XVOLT (277V-480V) [4]	MA Mast arm adaptor (fits 2-3/8" OD horizontal tenon)
	P4		R4 Type 4 Wide	(use specific voltage for options as noted)	IS Adjustable slipfitter (fits 2-3/8" OD tenon) [6]
	P5		R4S Type 4 Short	120 [3] 277 [5]	WBA Wall bracket [1]
	P6		R5 Type 5 Wide [1]	208 [3] 347 [5]	WBASC Wall bracket with surface conduit box
			R5S Type 5 Short [1]	240 [3] 480 [5]	AASP Adjustable tilt arm square pole mounting [6]
			AFR Automotive Front Row		AARP Adjustable tilt arm round pole mounting [6]
			AFRR90 Automotive Front Row Right Rotated		AAWB Adjustable tilt arm with wall bracket [6]
			AFRL90 Automotive Front Row Left Rotated		AAWSC Adjustable tilt arm wall bracket and surface conduit box [6]

Options

Shipped Installed

HS	House-side shield [7]
PE	Photocontrol, button style [8,9]
PER7	Seven-wire twist-lock receptacle only (no controls) [9, 10, 11]
SF	Single fuse (120, 277, 347) [5]
DF	Double fuse (208, 240, 480) [5]
SPD20KV	20KV Surge pack (10KV standard)
FAO	Field adjustable output [9]
DMG	0-10V dimming extend out back of housing for external control (control ordered separate) [9]
DS	Dual switching [9,12]

Shipped Installed

***Standalone and Networked Sensors/Controls (factory default settings, see table page 9)**

NLTAIR2 PIRHN	nLight AIR generation 2 ,with Networked, Bi-Level motion/ambient sensor [9, 13, 14, 15]
BAA	Buy America(n) Act and/or Build America Buy America Qualified
CCE	Coastal Construction [16]

*Note: NLTAIR2 PIRHN with nLight Air can be used as a standalone dimming sensor with out-of-box settings or as a wireless networked solution. See factory default settings table. Sensor coverage pattern is affected when luminaire is tilted.

Shipped Separately (requires some field assembly)

EGS	External glare shield [7]
EGFV	External glare full visor (360° around light aperture) [7]
BS	Bird spikes [17]

Finish

DDBXD	Dark Bronze
DBLXD	Black
DNAXD	Natural Aluminum
DWHXD	White
DDBTXD	Textured Dark Bronze
DBLBXD	Textured Black
DNATXD	Textured Natural Aluminum
DWHGXD	Textured White

© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

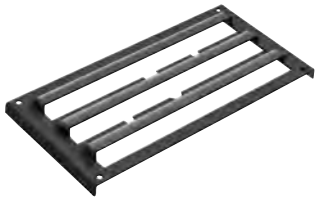
Ordering Information

Accessories
Ordered and shipped separately.

RSX2HS	RSX2 House side shield (includes 2 shields)
RSX2EGS (FINISH) U	External glare shield (specify finish)
RSX2HSAFRR (FINISH) U	RSX2 House side shields for AFR rotated optics (includes 2 shields)
RSX2EGFV (FINISH) U	External glare full visor (specify finish)
RSXRPA (FINISH) U	RSX Universal round pole adaptor plate (specify finish)
RSXWBA (FINISH) U	RSX WBA wall bracket (specify finish) [1]
RSXSCB (FINISH) U DLL127F 1.5 JU	RSX Surface conduit box (specify finish, for use with WBA, WBA not included) Photocell -SSL twist-lock (120-277V) [18]
DLL347F 1.5 CUL JU	Photocell -SSL twist-lock (347V) [18]
DLL480F 1.5 CUL JU	Photocell -SSL twist-lock (480V) [18]
DSHORT SBK U	Shorting cap [18]

NOTES
1 Any Type 5 distribution, is not available with WBA.
2 MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
3 HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
4 XVOLT driver not available with P1. XVOLT driver operates on any line voltage from 277V-480V (50/60 Hz). XVOLT not available with fusing (SF or DF) and not available with PE.
5 Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
6 Maximum tilt is 90° above horizontal.
7 It may be ordered as an accessory.
8 Requires MVOLT or 347V.
9 Two or more of the following options cannot be combined including PE, DMG, PER7, FAO, DS and NLTAIR2 PIRHN. (Exception: PE and FAO can be combined; also PE and DMG can be combined.)
10 Compatible with standard twist-lock photocells for dusk to dawn operation or advanced control nodes that provide 0-10V dimming signals. Wire 4/Wire 5 wired to dimming leads on driver. Wire6/Wire7 capped inside luminaire. Twistlock photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included.
11 For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
12 DS requires (2) separately switched circuits. DS provides 50/50 fixture operation via (2) different sets of leads using (2) drivers. DS only available with packages P5 and P6.
13 Must be ordered with PIRHN.
14 Requires MVOLT or HVOLT.
15 Must be ordered with NLTAIR2. For additional information on PIRHN visit here.
16 CCE option not available with WBA, WBASC, AASP, AARP, AAWB, AAWBSC, EGS, EGFV and BS.
17 Must be ordered with fixture for factory pre-drilling.
18 Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields



House Side Shield

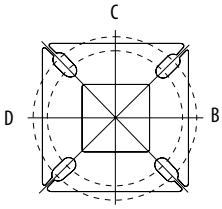
External Glare Shield

External 360 Full Visor

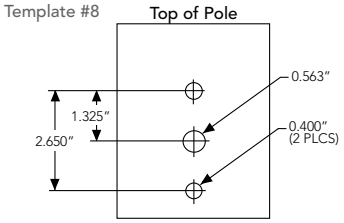
Pole/Mounting Informatiion

Accessories including bullhorns, cross arms and other adpaters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit Accessories.

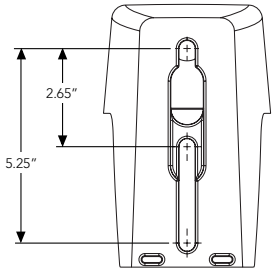
HANDHOLE ORIENTATION



RSX POLE DRILLING



RSX STANDARD ARM & ADJUSTABLE ARM



Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2 - 3/8"	RPA, AARP	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 320	AS3-5 390	AS3-5 490
2 - 7/8"	RPA, AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	RPA, AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Drill/Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	**Drill Nomenclature**	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSX2 - Luminaire EPA

*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

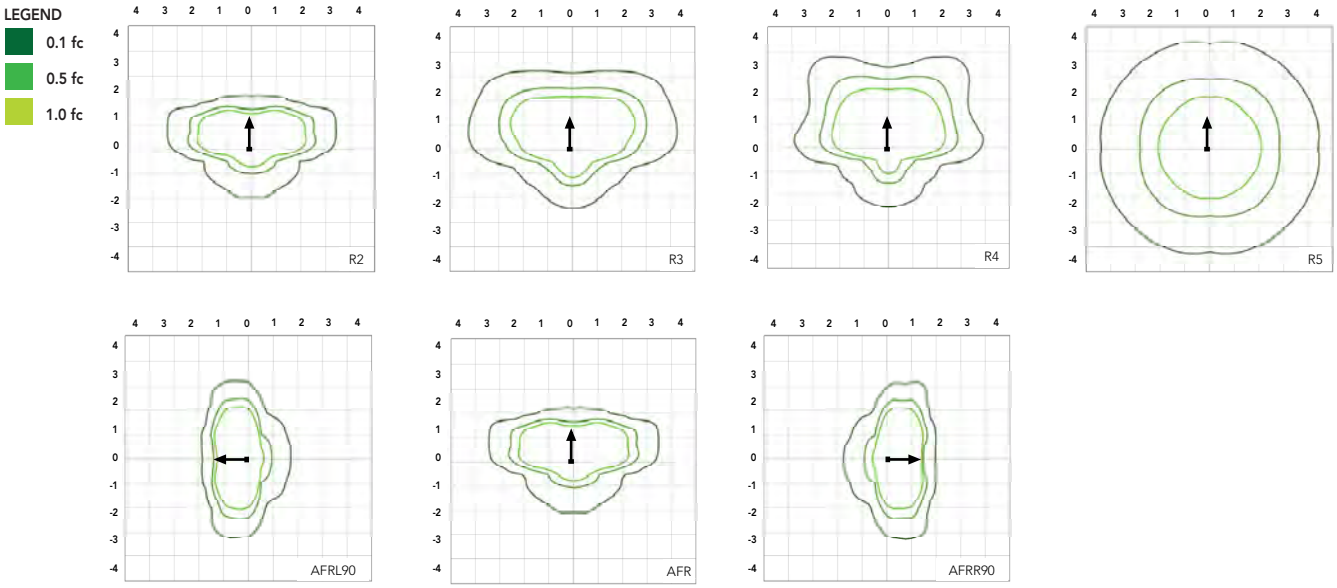
Fixture Quantity & Mounting Configuration		Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side	4 Side by Side
Mounting Type	**Tilt**									
SPA - Square Pole Adaptor	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
RPA - Round Pole Adaptor		0.74	1.27	1.37	1.9	1.71	2.49	1.42	2.16	2.84
MA - Mast Arm Adaptor		0.61	1.14	1.11	1.64	1.45	2.23	1.29	1.9	2.58
IS - Integral Slipfitter AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
	10°	0.53	1.06	1.05	1.58	1.37	2.08	1.06	1.59	2.12
	20°	0.52	1.02	1.03	1.52	1.33	2.02	1.03	1.55	2.07
	30°	0.64	1.11	1.18	1.63	1.45	2.21	1.27	1.91	2.54
	40°	0.81	1.21	1.35	1.74	1.65	2.39	1.62	2.43	3.23
	45°	0.91	1.25	1.5	1.81	1.75	2.48	1.82	2.73	3.64
	50°	1.34	1.83	2.17	2.61	2.56	3.62	2.68	4.02	5.36
	60°	2.2	2.97	3.57	4.24	4.17	5.89	4.41	6.61	8.82
	70°	2.86	4.13	4.7	5.89	5.71	8.21	5.71	8.57	11.42
	80°	3.4	5.13	5.67	7.34	7.09	10.21	6.79	10.19	13.59
	90°	3.85	5.96	6.55	8.58	8.31	11.88	7.70	11.56	15.41

© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's RSX Area homepage.

Isofootcandle plots for the RSX2 LED P6 40K. Distances are in units of mounting height (30').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

Ambient	Ambient	Lumen Multiplier
0°C	32°F	1.05
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97
45°C	113°F	0.96
50°C	122°F	0.95

Electrical Load

		Current (A)					
Performance Package	System Watts (W)	120V	208V	240V	277V	347V	480V
P1	71W	0.59	0.34	0.30	0.26	0.20	0.15
P2	111W	0.93	0.53	0.46	0.40	0.32	0.23
P3	147W	1.23	0.70	0.61	0.53	0.42	0.31
P4	187W	1.55	0.90	0.78	0.68	0.53	0.38
P5	210W	1.75	1.01	0.87	0.76	0.60	0.44
P6	244W	2.03	1.17	1.01	0.88	0.70	0.51

Projected LED Lumen Maintenance

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.97	>0.95	>0.92

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Distribution. Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	71W	R2	10,040	2	0	1	139	11,031	2	0	1	153	11,031	2	0	1	153
		R3	10,005	2	0	2	141	10,992	2	0	2	155	10,992	2	0	2	155
		R3S	10,271	2	0	2	143	11,285	2	0	2	157	11,285	2	0	2	157
		R4	10,136	2	0	2	143	11,136	2	0	2	157	11,136	2	0	2	157
		R4S	9,779	2	0	2	138	10,744	2	0	2	151	10,744	2	0	2	151
		R5	10,271	4	0	2	145	11,285	4	0	2	159	11,285	4	0	2	159
		R5S	10,544	3	0	1	149	11,585	3	0	2	163	11,585	3	0	2	163
		AFR	10,026	2	0	1	141	11,016	2	0	1	155	11,016	2	0	1	155
		AFRR90	10,122	3	0	2	140	11,121	3	0	2	154	11,121	3	0	2	154
		AFRL90	10,164	3	0	2	141	11,167	3	0	2	155	11,167	3	0	2	155
P2	111W	R2	15,712	2	0	2	138	17,263	2	0	2	151	17,263	2	0	2	151
		R3	15,657	2	0	3	141	17,202	3	0	3	155	17,202	3	0	3	155
		R3S	16,075	2	0	2	141	17,661	2	0	2	155	17,661	2	0	2	155
		R4	15,862	2	0	3	143	17,427	2	0	3	157	17,427	2	0	3	157
		R4S	15,304	2	0	2	138	16,815	2	0	2	151	16,815	2	0	2	151
		R5	16,075	4	0	2	145	17,661	5	0	3	159	17,661	5	0	3	159
		R5S	16,502	4	0	2	149	18,130	4	0	2	163	18,130	4	0	2	163
		AFR	15,691	2	0	2	141	17,240	2	0	2	155	17,240	2	0	2	155
		AFRR90	15,841	3	0	3	139	17,404	4	0	3	153	17,404	4	0	3	153
		AFRL90	15,907	3	0	3	139	17,477	4	0	3	153	17,477	4	0	3	153
P3	147W	R2	19,855	3	0	2	132	21,814	3	0	2	145	21,814	3	0	2	145
		R3	19,785	3	0	3	135	21,737	3	0	4	148	21,737	3	0	4	148
		R3S	20,312	3	0	3	135	22,317	3	0	3	149	22,317	3	0	3	149
		R4	20,044	3	0	3	136	22,022	3	0	4	150	22,022	3	0	4	150
		R4S	19,339	3	0	3	132	21,247	3	0	3	145	21,247	3	0	3	145
		R5	20,313	5	0	3	138	22,317	5	0	3	152	22,317	5	0	3	152
		R5S	20,852	4	0	2	142	22,910	4	0	2	156	22,910	4	0	2	156
		AFR	19,828	3	0	2	135	21,785	3	0	2	148	21,785	3	0	2	148
		AFRR90	20,017	4	0	3	133	21,992	4	0	3	147	21,992	4	0	3	147
		AFRL90	20,101	4	0	3	134	22,084	4	0	3	147	22,084	4	0	3	147
P4	187W	R2	22,836	3	0	2	120	25,090	3	0	2	132	25,090	3	0	2	132
		R3	22,756	3	0	4	122	25,002	3	0	4	134	25,002	3	0	4	134
		R3S	23,363	3	0	3	123	25,668	3	0	3	135	25,668	3	0	3	135
		R4	23,054	3	0	4	123	25,329	3	0	4	135	25,329	3	0	4	135
		R4S	22,243	3	0	3	119	25,059	3	0	3	134	25,059	3	0	3	134
		R5	23,363	5	0	3	125	25,669	5	0	4	137	25,669	5	0	4	137
		R5S	23,983	4	0	2	128	26,350	4	0	2	141	26,350	4	0	2	141
		AFR	22,806	3	0	2	122	25,056	3	0	2	134	25,056	3	0	2	134
		AFRR90	23,023	4	0	3	121	25,295	4	0	3	133	25,295	4	0	3	133
		AFRL90	23,120	4	0	3	122	25,401	4	0	3	134	25,401	4	0	3	134
P5	210W	R2	26,141	3	0	2	122	28,721	3	0	2	135	28,721	3	0	2	135
		R3	26,049	3	0	4	124	28,620	3	0	4	136	28,620	3	0	4	136
		R3S	26,744	3	0	3	125	29,383	3	0	4	138	29,383	3	0	4	138
		R4	26,390	3	0	4	126	28,994	3	0	4	138	28,994	3	0	4	138
		R4S	25,462	3	0	3	121	27,974	3	0	3	133	27,974	3	0	3	133
		R5	26,744	5	0	4	127	29,383	5	0	4	140	29,383	5	0	4	140
		R5S	27,454	4	0	2	131	30,163	4	0	2	144	30,163	4	0	2	144
		AFR	26,106	3	0	2	124	28,682	3	0	2	137	28,682	3	0	2	137
		AFRR90	26,354	4	0	3	123	28,955	5	0	3	136	28,955	5	0	3	136
		AFRL90	26,465	4	0	3	124	29,077	5	0	3	136	29,077	5	0	3	136
P6	244W	R2	27,646	3	0	2	112	30,374	3	0	2	123	30,374	3	0	2	123
		R3	27,549	3	0	4	113	30,267	3	0	4	124	30,267	3	0	4	124
		R3S	28,283	3	0	3	115	31,075	3	0	4	126	31,075	3	0	4	126
		R4	27,909	3	0	4	114	30,663	3	0	4	126	30,663	3	0	4	126
		R4S	26,928	3	0	3	110	29,585	3	0	3	121	29,585	3	0	3	121
		R5	28,284	5	0	4	116	31,075	5	0	4	127	31,075	5	0	4	127
		R5S	29,035	4	0	2	119	31,900	5	0	3	131	31,900	5	0	3	131
		AFR	27,608	3	0	2	112	30,332	3	0	2	123	30,332	3	0	2	123
		AFRR90	27,872	4	0	3	113	30,622	5	0	3	124	30,622	5	0	3	124
		AFRL90	27,989	4	0	3	113	30,751	5	0	3	125	30,751	5	0	3	125

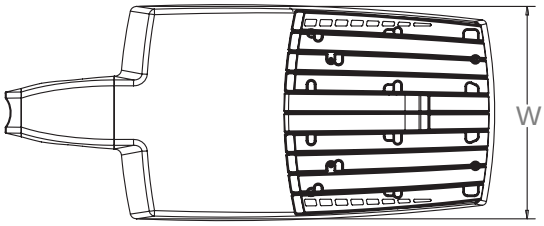
© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

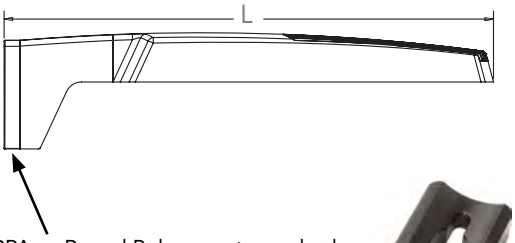
Dimensions & Weights

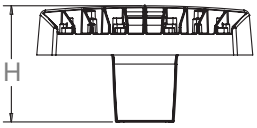
Luminaire Weight by Mounting Type

Mounting Configuration	Total Luminaire Weight
SPA	30 lbs
RPA	32 lbs
MA	30 lbs
WBA	33 lbs
WBASC	36 lbs
IS	33 lbs
AASP	33 lbs
AARP	35 lbs
AAWB	36 lbs
AAWSC	39 lbs

RSX2 with Round Pole Adapter (RPA)



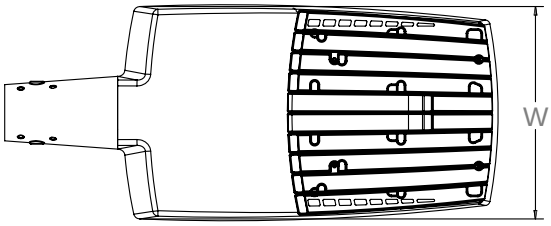


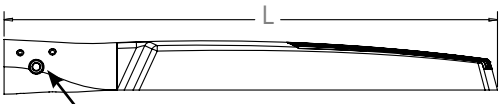


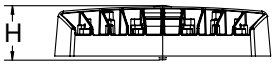
Length: 30.3" (77.0 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
7.2" (18.3 cm) Arm

Note: RPA — Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

RSX2 with Mast Arm Adapter (MA)

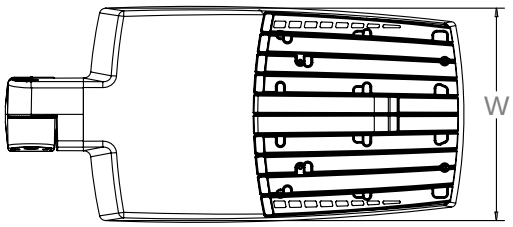


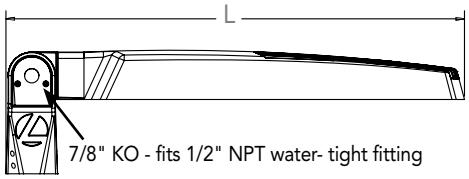


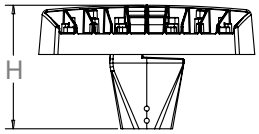


Length: 30.6" (77.7 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
3.5" (8.9 cm) Arm

RSX2 with Adjustable Slipfitter (IS)





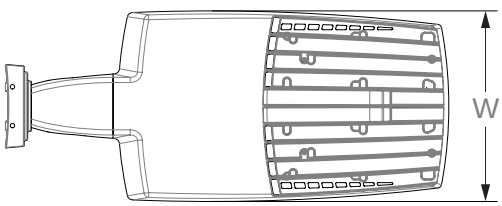


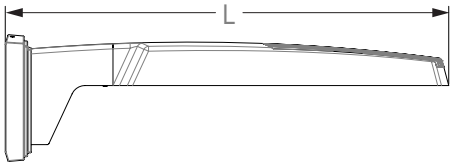
Length: 28.3" (71.9 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
7.6" (19.3 cm) Arm

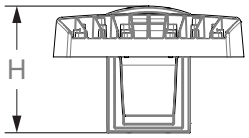
© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

Dimensions

RSX2 with Wall Bracket (WBA)

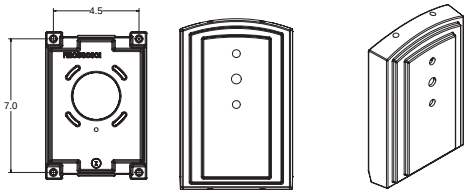




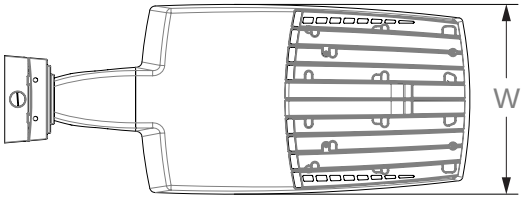


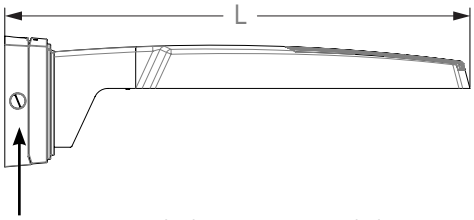
Length: 31.2" (79.2 cm)
Width: 13.4" (41.7 cm)
Height: 3.0" (7.6 cm) Main Body
8.9" (22.6 cm) Arm

Wall Bracket (WBA) Mounting Detail

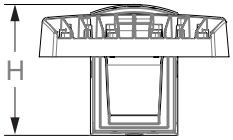


RSX2 with Wall Bracket with Surface Conduit Box (WBASC)



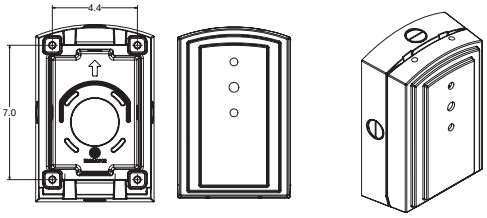


3/4" NPT taps with plugs - Qty (4) provided



Length: 32.8" (83.3 cm)
Width: 13.4" (41.7 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

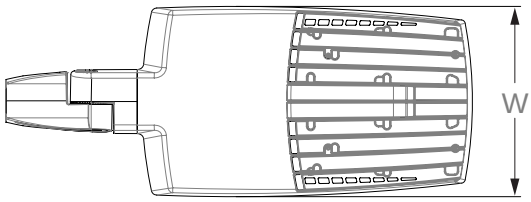
Surface Conduit Box (SCB) Mounting Detail

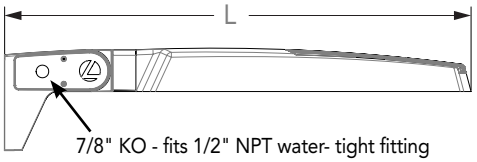


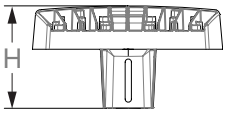
© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

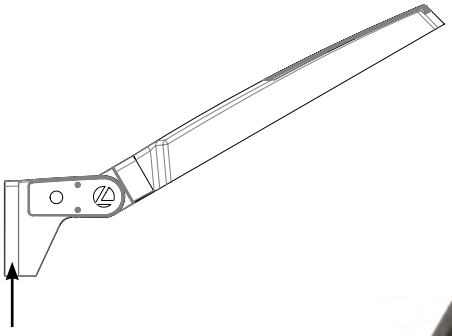
Dimensions

RSX2 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)









Length: 32.8" (83.3 cm) **AASP**
33.8" (85.9 cm) **AARP**
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
7.2" (18.2 cm) Arm

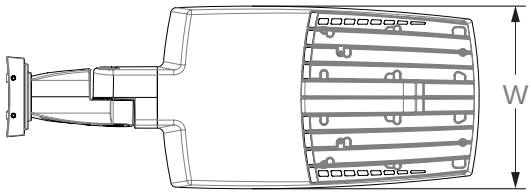
NOTE:
RPA - Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

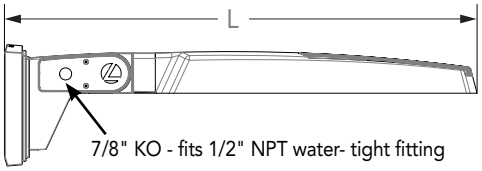
Notes

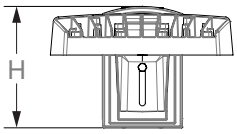
AASP: Requires 3.0" min. square pole for 1 at 90°. Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°.

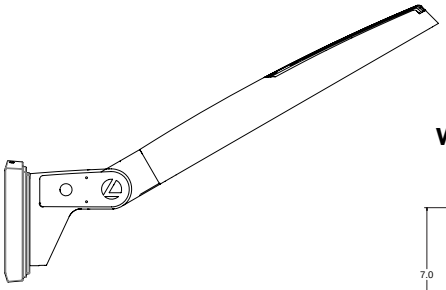
AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

RSX2 with Adjustable Tilt Arm with Wall Bracket (AAWB)



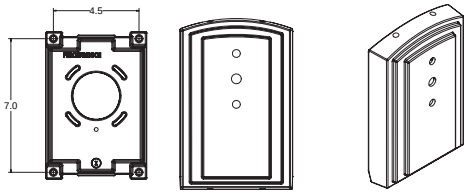






Length: 34.7" (88.0 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
8.9" (22.6 cm) Arm

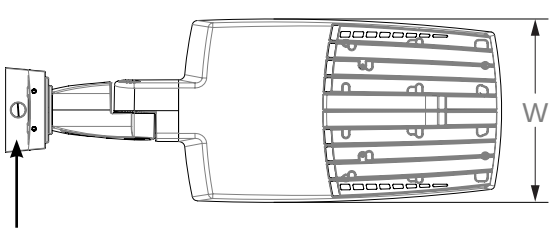
Wall Bracket (WBA) Mounting Detail

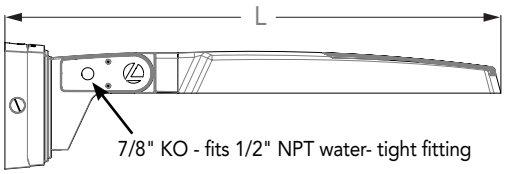


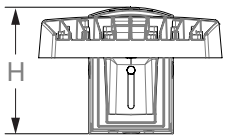
One Lithonia Way • Conyers, Georgia 30012 • Phone: 1-800-705-SERV (7378) • www.acuitybrands.com
© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

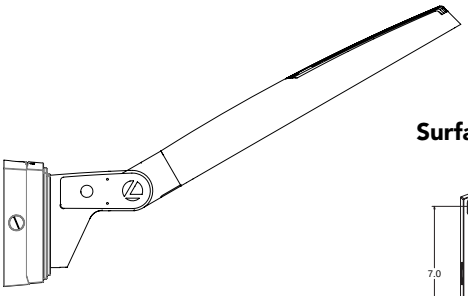
Dimensions

RSX2 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)



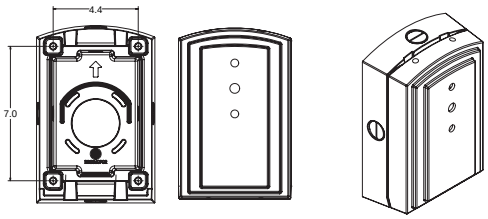




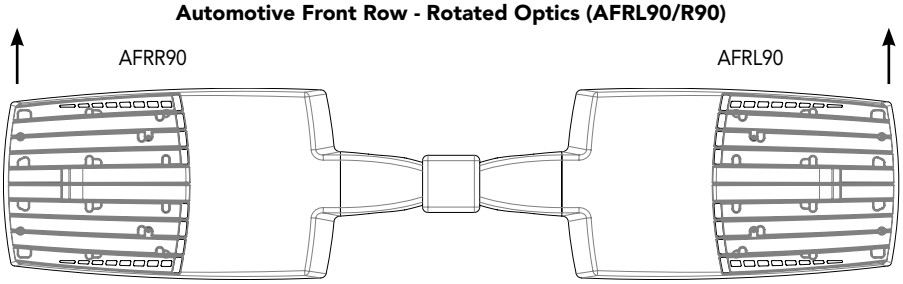


Length: 36.2" (91.9 cm)
Width: 13.4" (40.0 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

Surface Conduit Box (SCB) Mounting Detail



Automotive Front Row - Rotated Optics (AFRL90/R90)



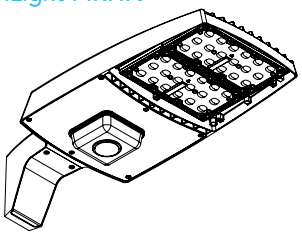
(Example: 2@180 - arrows indicate direction of light exiting the luminaire)

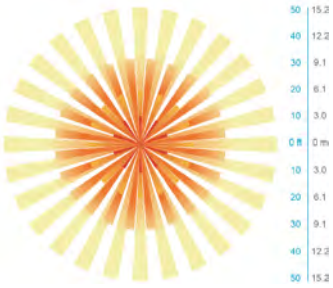
© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

nLight Control - Sensor Coverage and Settings

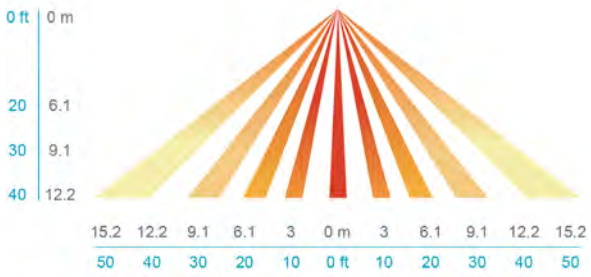
NLTAIR2 PIRHN nLight Sensor Coverage Pattern

nLight PIRHN





Top



Side

Motion Sensor Default Settings - Option PIRHN						
Option	Dimmed State (unoccupied)	High Level (when occupied)	Photocell Operation	Dwell Time (occupancy time delay)	Ramp-up Time (from unoccupied to occupied)	Ramp-down Time (from occupied to unoccupied)
NLTAIR2 PIRHN	Approx. 30% Output	100% Output	Enabled @ 1.5FC	7.5 minutes	3 seconds	5 minutes

*Note: NLTAIR2 PIRHN default settings including photocell set-point, high/low dim rates, and occupancy sensor time delay are all configurable using the Clairity Pro App. Sensor coverage pattern shown with luminaire at 0°. Sensor coverage pattern is affected when luminaire is titled.

FEATURES & SPECIFICATIONS

INTENDED USE
The RSX LED area family is designed to provide a long-lasting, energy-efficient solution for the one-for-one replacement of existing metal halide or high pressure sodium lighting. The RSX2 delivers 11,000 to 31,000 lumens and is ideal for replacing 250W to 1000W HID pole-mounted luminaires in parking lots and other area lighting applications.

CONSTRUCTION AND DESIGN
The RSX LED area luminaire features a rugged die-cast aluminum main body that uses heat-dissipating fins and flow-through venting to provide optimal thermal management that both enhances LED performance and extends component life. Integral "no drill" mounting arm allows the luminaire to be mounted on existing pole drillings, greatly reducing installation labor. The light engines and housing are sealed against moisture and environmental contaminants to IP66. The low-profile design results in a low EPA, allowing pole optimization. Vibration rated per ANSI C136.31: 3G Mountings: Include SPA, RPA, MA, IS, AASP, AARP rated for 3G vibration. 1.5G Mountings: Include WBA, WBASC, AAWB and AAWSC rated for 1.5G vibration.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures superior adhesion as well as a minimum finish thickness of 3 mils. The result is a high-quality finish that is warrantied not to crack or peel.

OPTICS
Precision acrylic refractive lenses are engineered for superior application efficiency, distributing the light to where it is needed most. Available in short and wide pattern distributions including Type 2, Type 3, Type 3S, Type 4, Type 4S, Type 5, Type 5S, AFR (Automotive Front Row) and AFR rotated AFRR90 and ARFL90.

COASTAL CONSTRUCTION (CCE)
Optional corrosion resistant construction is engineered with added corrosion protection in materials and/or pre-treatment of base material under super durable paint. Provides additional corrosion protection for applications near coastal areas. Finish is salt spray tested to over 5,000 hours per ASTM B117 with scribe rating of 10. Additional lead-times apply.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted on metal-core circuit boards and aluminum heat sinks to maximize heat dissipation. Light engines are IP66 rated. LED lumen maintenance is >L92/100,000 hours. CCT's of 3000K, 4000K and 5000K (minimum 70 CRI) are available. Fixtures ship standard with 0-10v dimming driver. Class 1 electronic drivers ensure system power factor >90% and THD <20%. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS
The RSX LED area luminaire has a wide assortment of control options. Dusk to dawn controls include MVOLT and 347V button-type photocells and NEMA twist-lock photocell receptacles.

nLIGHT AIR CONTROLS
The RSX LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing with photocontrol functionality and is suitable for mounting heights up to 40 feet. No commissioning is required when using factory default settings that provide basic stand-alone motion occupancy dimming that is switched on and off with a built-in photocell. See chart above for motion sensor default out-of-box settings. For more advanced wireless functionality, such as group dimming, nLight AIR can be commissioned using a smartphone and the easy-to-use CLAIRITY app. nLight AIR equipped luminaries can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclypse. Additional information about nLight Air can be found here.

INSTALLATION
Integral "no-drill" mounting arm allows for fast, easy mounting using existing pole drillings. Select the "SPA" option for square poles and the "RPA" option to mount to round poles. Note, the RPA mount can also be used for mounting to square poles by omitting the RPA adapter plate. Select the "MA" option to attach the luminaire to a 2 3/8" horizontal mast arm or the "IS" option for an adjustable slipfitter that mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box and offers easy installation. Can be tilted up to 90° above horizontal. Additional mountings are available including a wall bracket, adjustable tilt arm for direct-to-pole and wall and a surface conduit box for wall mount applications.

LISTINGS
CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only. US Patent No. D882, 146S

GOVERNMENT PROCUREMENT
BAA – Buy America(n) Act: Product with the BAA option qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product with the BAA option also qualifies as manufactured in the United States under DOT Buy America regulations.
BABA – Build America Buy America: Product with the BAA option also qualifies as produced in the United States under the definitions of the Build America, Buy America Act.
Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at:
www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

© 2011-2025 Acuity Brands Lighting, Inc. All rights reserved.

d⁼series

D-Series DSXF2
LED Floodlight

Catalog Number

Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

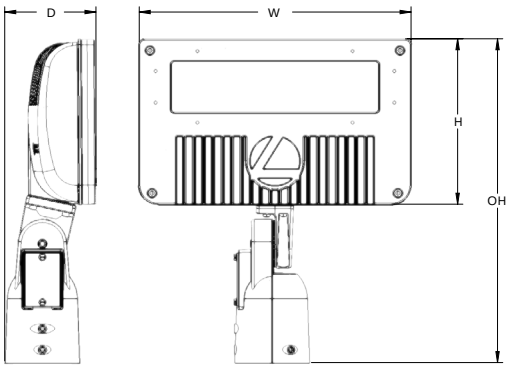
Introduction

The D-Series floodlights feature a site-wide offering to meet specifier's every floodlighting need in application. The D-Series flood offers three sizes delivering 3,000 to 27,000 lumens. Available with seven precision optics, three mountings and three color temperatures, D-Series floodlights offer vast design capabilities while delivering significant energy savings and long life.

The DSXF2 delivers 7,000 to 17,000 lumens, meeting a large breadth of illumination requirements for design and renovation when replacing 175W, 250W and 400W HID floodlights. All configurations are assembled in the USA allowing for quick delivery.

Specifications

EPA @ 90°:	0.8 ft² *(0.07 m²)*
Depth:	4.32" *(11.0 cm)*
Width:	12.87" *(32.7 cm)*
Height:	7.83" *(19.9 cm)*
Overall Height	15.33" *(39.0 cm)*
Weight:	12.0 lbs *(5.4 kg)*



Ordering Information

EXAMPLE: DSXF2 LED P1 40K 70CRI MSP MVOLT THK DDBXD

DSXF2 LED

Series	Performance Package	Color Temperature	CRI	Distribution	Voltage	Mounting
DSXF2 LED	P1	30K 3000K	70CRI	WFL Wide flood (6X6)	MVOLT[2]	**Shipped included**
	P2	40K 4000K		FL Flood (5X5)	347	THK Knuckle with 1/2" NPT threaded pipe
	P3	50K 5000K		MFL Medium flood (4X4)	480	YKC62 Yoke with 2ft 16-3 SO cord
	P4[1]			WFR Wide flood, rectangular (6X5)		IS Integral slipfitter (fits 2-3/8" O.D. tenon)
				HMF Horizontal flood (6X4)		
				MSP Medium spot (4X4)		
				NSP Narrow spot (3X3)		

Options

Shipped installed

PE	Photocontrol, button style (MVOLT or 347V)[3]
DMG	0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)
SPD10KV	Separate surge protection
CCE	Coastal Construction[4]

Shipped separately[5]

UBV	Upper/bottom visor (universal)
FV	Full visor
VG	Vandal guard

Finish (required)

DDBXD	Dark bronze
DBLXD	Black
DNAXD	Natural aluminum
DWHXD	White

Accessories[4]

Ordered and shipped separately.

DSXF1/2TS DDBXD U	Slipfitter for 1-1/4" to 2-3/8" OD tenons; 1/2" THK required (specify finish)
FTS CG6 DDBXD U	Slipfitter for 2-3/8" to 2-7/8" OD tenons; YKC62 required (specify finish)
FRWB DDBXD U	Radius wall bracket, 2-3/8" OD tenon (specify finish)
FSPB DDBXD U	Steel square pole bracket, 2-3/8" OD tenon (specify finish)
DSXF2UBV DDBXD U	Upper/bottom visor accessory (specify finish)
DSXF2FV DDBXD U	Full visor accessory (specify finish)
DSXF2VG U	Vandal guard accessory

For more mounting options, visit our Floodlighting Accessories pages.

NOTES

1. Performance package P4 is not available with HMF, MFL, MSP and NSP optics.
2. MVOLT driver operates on line voltage from 120-277V.
3. Requires MVOLT or 347V (Not available in 480V).
4. CCE option not available with DSXF1/2 TS or FTS CG6
5. Also available as separate accessories; see Accessories information at left.

© 2012-2025 Acuity Brands Lighting, Inc. All rights reserved.

Mountings

IS – Adjustable Slipfitter
(Fits 2-3/8" O.D. tenon)

YKC62 - Yoke with 16-3
SO cord, 2ft

THK - Threaded Knuckle with
1/2" NPT threaded pipe

External Shields

UBV Visor
Top Mounted

UBV Visor
Bottom Mounted

FV - Full Visor

Accessories

VG - Vandal Guard

DSXF1/2TS - THK
Slipfitter Accessory

© 2012-2025 Acuity Brands Lighting, Inc. All rights reserved.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown within applicable tolerances. Actual performance may differ as a result of end-user environment and application. Actual wattage may differ by +/- 8% when operating between 120-480V +/- 10%. Contact factory for performance data on any configurations not shown here.

Performance Package	System Watts	Dist.Type	NEMA Type	Field Angle		Beam Angle		30K (3000K, 70 CRI)			40K (4000K, 70 CRI)			50K (5000K, 70 CRI)		
				°H	°V	°H	°V	Lumens	LPW	Max Cd	Lumens	LPW	Max Cd	Lumens	LPW	Max Cd
P1	52	WFL	6 X 6	109	106	83	87	7,353	140	3,777	7,489	143	3,847	7,625	145	3,917
		FL	5 X 5	94	93	68	69	7,290	139	5,804	7,426	142	5,912	7,561	144	6,019
		WFR	6 X 5	108	93	84	69	7,375	141	4,722	7,512	143	4,810	7,648	146	4,897
	64	HMF	6 X 4	125	65	96	54	7,576	119	6,204	7,850	123	6,428	7,774	122	6,365
		MFL	4 X 4	61	60	46	46	7,915	124	12,766	8,201	128	13,228	8,121	127	13,099
		MSP	4 X 4	51	52	27	30	8,138	128	29,618	8,433	132	30,690	8,351	131	30,391
		NSP	3 X 3	41	40	20	17	8,248	129	47,865	8,546	134	49,597	8,463	133	49,114
P2	75	WFL	6 X 6	109	106	83	87	10,161	135	5,219	10,349	138	5,316	10,538	140	5,142
		FL	5 X 5	94	93	68	69	10,192	136	6,526	10,262	137	8,169	10,448	139	8,318
		WFR	6 X 5	108	93	84	69	10,075	134	8,021	10,381	138	6,646	10,570	141	6,767
	80	HMF	6 X 4	125	65	96	54	8,963	113	7,340	9,288	117	7,605	9,197	115	7,531
		MFL	4 X 4	61	60	46	46	9,364	118	15,104	9,703	122	15,651	9,609	121	15,498
		MSP	4 X 4	51	52	27	30	9,629	121	35,043	9,977	125	36,310	9,880	124	35,957
		NSP	3 X 3	41	40	20	17	9,758	122	56,632	10,111	127	58,681	10,013	126	58,109
P3	93	WFL	6 X 6	109	106	83	87	12,054	130	6,191	12,278	132	6,306	12,501	135	6,421
		FL	5 X 5	94	93	68	69	11,952	129	9,515	12,173	131	9,691	12,395	133	9,868
		WFR	6 X 5	108	93	84	69	12,091	130	7,741	12,315	133	7,885	12,539	135	8,028
	100	HMF	6 X 4	125	65	96	54	10,487	105	8,588	10,867	109	8,898	10,761	108	8,812
		MFL	4 X 4	61	60	46	46	10,956	110	17,672	11,353	114	18,311	11,242	113	18,133
		MSP	4 X 4	51	52	27	30	11,266	113	41,000	11,674	117	42,483	11,560	116	42,070
		NSP	3 X 3	41	40	20	17	11,417	114	66,260	11,830	119	68,657	11,715	117	67,988
P4	145	WFL	6 X 6	109	106	83	87	17,104	118	8,785	17,421	120	8,948	17,738	123	9,110
		FL	5 X 5	94	93	68	69	16,959	117	13,501	17,273	119	13,751	17,587	122	14,001
		WFR	6 X 5	108	93	84	69	17,156	119	10,984	17,473	121	11,188	17,791	123	11,391

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°F).

Ambient Temperature		Lumen Multiplier (Optics WFL, FL, WFR)	Lumen Multiplier (Optics HMF, MFL MSP, NSP)
0°C	32°F	1.04	1.06
5°C	41°F	1.04	1.05
10°C	50°F	1.03	1.04
15°C	59°F	1.02	1.03
20°C	68°F	1.01	1.01
25°C	**77°F**	**1.00**	**1.00**
30°C	86°F	0.99	0.99
35°C	95°F	0.98	0.97
40°C	104°F	0.97	0.96

Reported LED Lumen Maintenance

Data references the extrapolated performance projections for the platforms noted in a 25°C ambient and hours of LED testing (tested per IESNA LM-80-08 and reported per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Optic Type	Performance Package	TM-21 Percent Lumen Maintenance at 60,000 hrs
WFL, FL, WFR	P1 / P2 / P3 / P4	85%
MFL, HMF, MSP, NSP	P1 / P2 / P3	88%

Electrical Load

			Current (A)					
	Performance Package	System Watts (W)	120V	208V	240V	277V	347V	480V
Optic Type WFL, FL, WFR	P1	52	0.45	0.26	0.23	0.20	0.16	0.12
	P2	75	0.63	0.36	0.31	0.27	0.22	0.16
	P3	93	0.77	0.45	0.38	0.33	0.27	0.20
	P4	145	1.18	0.68	0.59	0.51	0.41	0.30
Optic Type HMF, MFL, MSP, NSP	P1	64	0.54	0.31	0.27	0.23	0.19	0.14
	P2	80	0.67	0.39	0.34	0.29	0.24	0.17
	P3	100	0.85	0.49	0.42	0.36	0.29	0.21

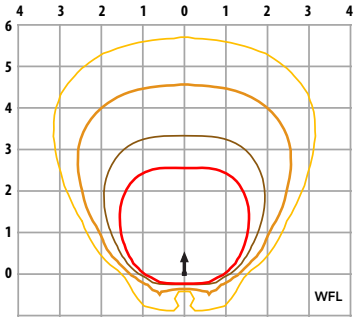
© 2012-2025 Acuity Brands Lighting, Inc. All rights reserved.

Photometric Diagrams

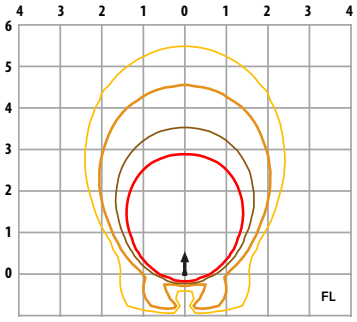
To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's D-Series Flood Size 2 homepage.

Isofootcandle plots for DSXF2. Distances are in units of mounting height (20ft).

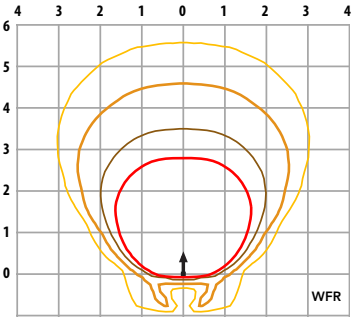
LEGEND
- 0.1 fc
- 0.25 fc
- 0.5 fc
- 1.0 fc



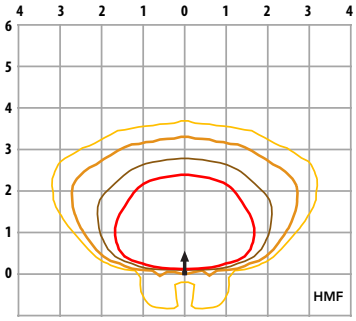
DSXF2 LED P4 40K - Tilted at 45°



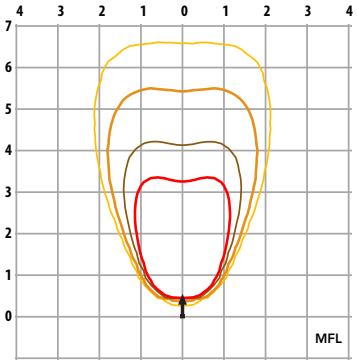
DSXF2 LED P4 40K - Tilted at 45



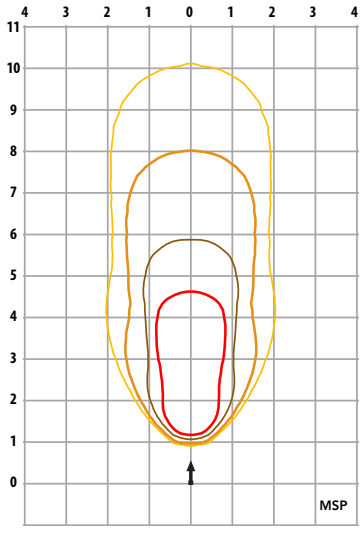
DSXF2 LED P4 40K - Tilted at 45



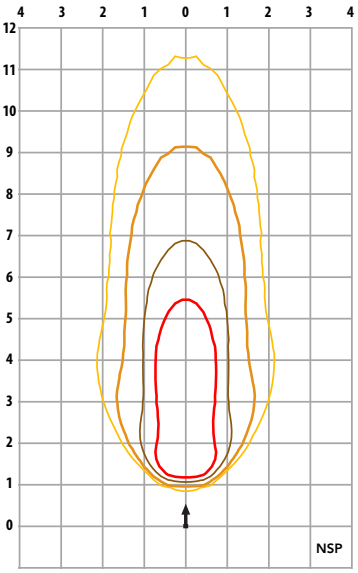
DSXF2 LED P3 40K - Tilted at 45



DSXF2 LED P3 40K - Tilted at 60



DSXF2 LED P3 40K - Tilted at 80



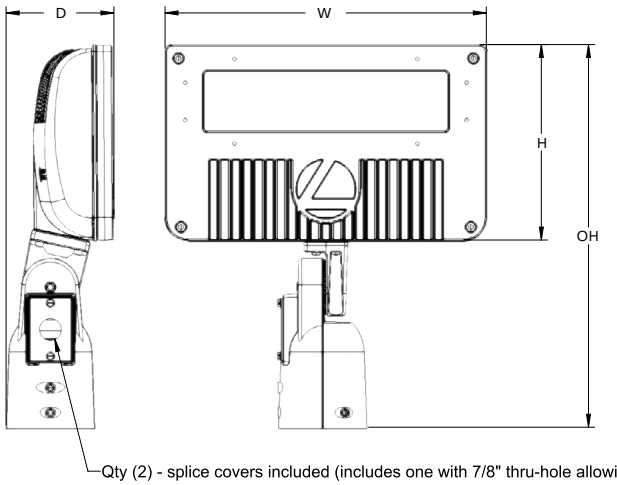
DSXF2 LED P3 40K - Tilted at 80

MH = 20ft
Grid = 20ft x 20ft

© 2012-2025 Acuity Brands Lighting, Inc. All rights reserved.

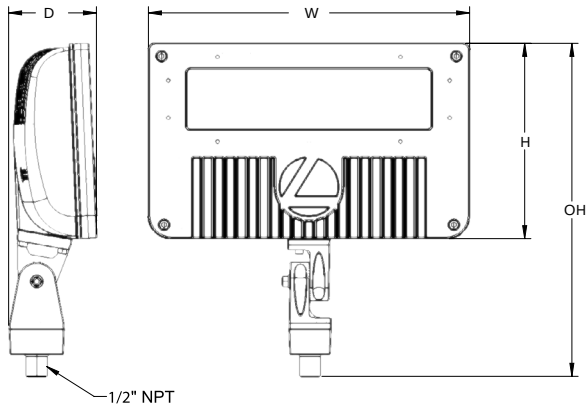
Dimensions

Adjustable Slipfitter (IS)



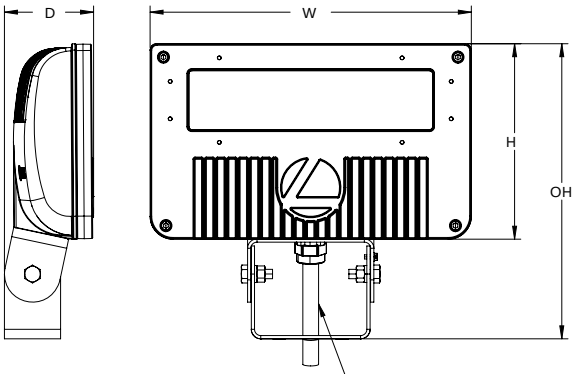
Width: 12.87" (32.7 cm)
Depth: 4.32" (11.0 cm)
Height: 7.83" (19.9 cm) main body
Overall:15.33" (39.0 cm) with arm
Weight: 12 lbs

Threaded Knuckle (THK)



Width: 12.87" (32.7 cm)
Depth: 3.52" (8.9 cm)
Height: 7.83" (19.9 cm) main body
Overall:13.34" (33.9 cm) with arm
Weight: 10.5 lbs

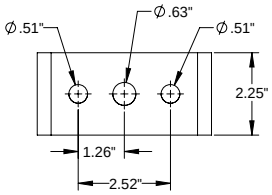
Yoke (YKC62)



Width: 12.87" (32.7 cm)
Depth: 3.57" (9.0 cm)
Height: 7.83" (19.9 cm) main body
Overall:11.82" (30.0 cm) with arm
Weight: 10.5 lbs

Note: Standard cord is 16-3 wire, 2 ft cord. Other lengths can be specified.
Ex: YKC62
YK = Yoke Mount
C6 = 16 gage, 3 wire cord
2 = 2 feet (5 = 5ft, 6 = 6ft, etc.)

Yoke (YK) Mounting Detail



© 2012-2025 Acuity Brands Lighting, Inc. All rights reserved.

Pole Mounting Information

Accessories including bullhorns, cross arms and other adapters are available. For the complete line of accessories available, visit the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit Accessories.

FEATURES & SPECIFICATIONS

INTENDED USE
The sleek and compact design of the D-Series floodlights reflects the embedded high performance LED technology while offering a clean aesthetic suitable for specification and general purpose floodlighting applications. Three sizes are available with seven precision optics allowing for maximum design versatility. DSXF2 delivers 7,000 to 17,000 lumens and is ideal for commercial lighting applications including new construction and replacing 175W, 250w and 400W HID floodlights. DSXF2 is ideal for area, security, facade, flagpole and signage lighting applications.

CONSTRUCTION
The DSXF2 LED floodlight features rugged die-cast aluminum construction with integral heat sink fins that optimize thermal management through conductive and convective cooling. The LED driver is mounted in direct contact with the casting to promote low operating temperature and long life. The housing and lens frame are completely sealed against moisture and environmental contaminants providing an IP66 rating. Low EPA (0.8 ft2) for optimized wind loading. DSXF2 is 1.5G vibration rated per ANSI C136.31.

FINISH
Exterior painted parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a 3 mils thickness for a finish that can withstand extreme climate changes without cracking or peeling. Standard Super Durable colors include dark bronze, black, natural aluminum, and white. Available in textured and non-textured finishes.

COASTAL CONSTRUCTION (CCE)
Optional corrosion resistant construction is engineered with added corrosion protection in materials and/or pre-treatment of base material under super durable paint. Provides additional corrosion protection for applications near coastal areas. Finish is salt spray tested to over 5,000 hours per ASTM B117 with scribe rating of 10. Additional lead-times may apply.

OPTICS
Seven unique precision-molded vacuum-metalized specular reflectors are engineered for superior field-to-beam ratios, uniformity and spacing. Light engines are available in 3000K, 4000K or 5000K (minimum 70 CRI) configurations. Optional visors offer additional versatility when shielding is required.

ELECTRICAL
Light engines consist of chip-on-board (COB) LEDs directly coupled to the housing to maximize heat dissipation and promote long life. LED lumen maintenance is L85/60,000 hours for WFL, FL and WFR optics and L88/60,000 hours for HMF, MFL, MSP and NSP optics. Class 1 electronic 0-10V continuous dimmable drivers ensure system power factor. 90% and THD <20%. Optional 10kV surge protection device meets a minimum Category C low operation (per ANSI/IEEE C62.41.2).

INSTALLATION
The die-cast integral "IS" mount features an adjustable slipfitter that mounts on a 2 3/8" OD tenon. Includes integral splice compartment offering easy installation and wiring. An extra cover plate with 7/8" through hole is provided to accommodate 1/2" water-tight fitting for power run from outside of the tenon. The "THK" adjustable knuckle mount includes a 1/2-14 NPT pipe thread. A steel yoke "YK" mount is available and includes a water tight cord grip and cord. DSXF2 features a glass lens enclosure that is protected to IP66 and is rated for lighting aimed up above 90°. Suitable for mounting within 4 feet of ground.

CONTROLS
DSXF2 features MVOLT (120-277V) and 347V button photocontrol.

LISTINGS
CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. Rated for -40°C minimum ambient.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

GOVERNMENT PROCUREMENT
BAA – Buy America(n) Act: Product qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product also qualifies as manufactured in the United States under DOT Buy America regulations.
BABA – Build America Buy America: Product qualifies as produced in the United States under the definitions of the Build America, Buy America Act.
Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY
5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at:
www.acuitybrands.com/support/warranty/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

© 2012-2025 Acuity Brands Lighting, Inc. All rights reserved.

Evolve™ LED Area Light

Scalable Wall Pack (EWS3)

current
powered by GE

Product Features

The GE Evolve LED Scalable Wall Pack is optimized for customers looking for an efficient and reliable LED solution to replace 75W - 250W Metal Halide wall mounted, site, area and general lighting applications.

Depending on the application, Evolve™ LED Scalable Wall Pack can yield up to a 75% reduction in system energy consumption compared with standard HID systems. Standard 0-10V dimming and an optional motion sensor with daylight harvesting can provide additional energy savings. The EWS3 offers a typical 105 LPW and is available in key lumen packages and reflective optics to optimize light output for most applications. This reliable system operates well in cold temperatures and offers more than 11 years of service life to reduce maintenance frequency and expense, based on a 50,000 hour rated life and 12 hours of operation per day. Containing no mercury or lead, this environmentally responsible product is RoHS compliant.

Applications

- Wall mounted, site, area and general lighting utilizing an advanced LED optical system providing uniformity, vertical light distribution, reduced offsite visibility, reduced on-site glare and effective security light levels.

Housing

- Die-cast aluminum housing.
- Sleek architectural design incorporating a heat sink directly into the unit ensuring maximum heat transfer and long LED life.
- Meets 1.5 G vibration standards per ANSI C136.31-2010.

LED & Optical Assembly

- Structured LED array for optimized light distribution.
- Evolve™ LED light engine utilizes reflective technology to optimize application efficiency and minimize glare.
- Utilizes high brightness LEDs, 70 CRI at 3000K, 4000K & 5000K typical.
- LM-79 tests and reports are performed in accordance with IESNA standards.

Lumen Maintenance

- Projected L90>47,000 hours per IES TM-21
- Projected Lxx per IES TM-21 at 25°C for reference:

SKU	LXX (10K)@HOURS		
	25,000 HR	50,000 HR	100,000 HR
EWS3	L94	L89	L80

Note: 1) Projected Lxx based on LM80 (10,000 hour testing). 2) DOE Lighting Facts Verification Testing Tolerances apply to initial Luminous flux and lumen maintenance measurements.

Lumen Ambient Temperature Factors:

AMBIENT TEMPERATURE (°C)	INITIAL FLUX FACTOR
10	1.02
20	1.01
25	1.00
30	0.99
40	0.98
50	0.97

Ratings

- UL listed, suitable for wet locations.
- cUL listed with option code "J" SKUs.
- IP 65 rated optical enclosure per ANSI C136.25-2013.
- Title 24 compliant with motion sensor option.
- Temperature rated at –40° to 50°C. (35°C for high wattage 90W SKU).
- Upward Light Output Ratio (ULOR) = 0
- Complies with the material restrictions of RoHS.

DLC Standard qualified models available. Please refer to http://www.designlights.org/QPL for complete information.

Mounting

- Flush wall mount to "J" box with inspection hole for IP 65.

Finish

- Corrosion resistant polyester powder paint, minimum 2.0 mil. thickness.
- Standard colors: Black and Dark Bronze.
- RAL & custom colors available.

Electrical

- 120-277 volt and 347-480 volt available.
- System power factor is >90% and THD <20%*.
- Surge protection per ANSI C136.2-2015:
  - Exceeds "Basic" (6kV/3kA) (120 strike)
- EMI: FCC Title 47 CFR Part 15 Class A.
- Motion sensor with dimming capability available with "H" option code.
- Button PE Sensitivity: Fixture on-3.5Fc
  Fixture off-11.8 Fc

** System THD <26% for 347-480v supply with A7 power level.*

Accessories

- Escutcheon Plates - See page 6

Warranty

- 5 Year standard

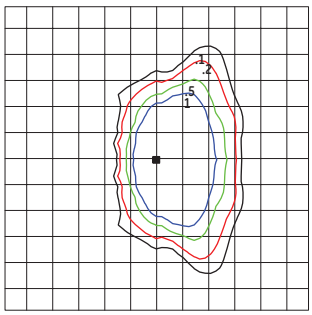
Ordering Number Logic

Scalable Wall Pack (EWS3)

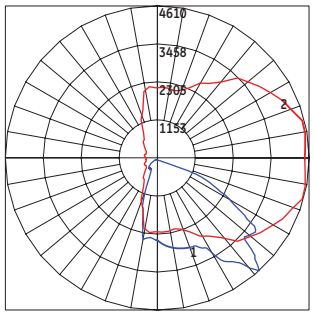
**E W S 3 _ _ _

Photometrics

EWS3 - Asymmetric Forward (D1)
8,600 Lumens, 5000K (EWS3_E3D150_____.IES)

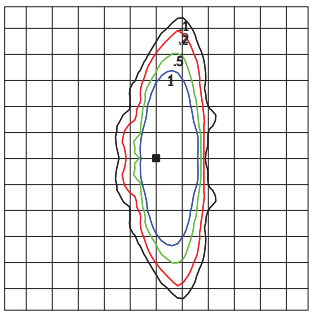


Grid Distance in Units of Mounting Height at 12'
Initial Footcandle Values at Grade

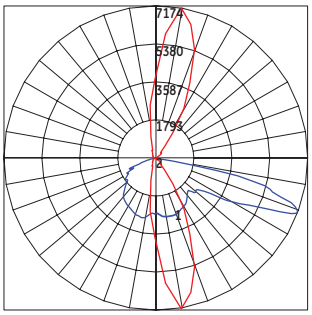


Polar Trace Vertical and Horizontal Plane through
Horizontal Angle of Maximum Candlepower

EWS3-Asymmetric Medium (E1)
8,600 Lumens, 5000K (EWS3_E3E150_____.IES)



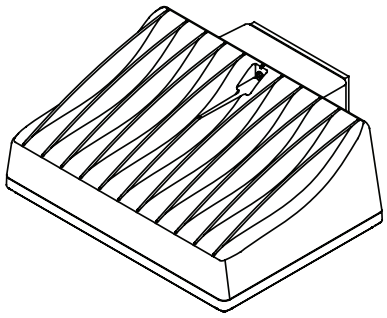
Grid Distance in Units of Mounting Height at 12'
Initial Footcandle Values at Grade



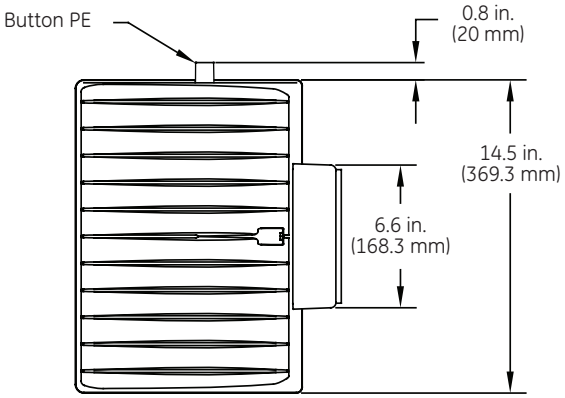
Polar Trace Vertical and Horizontal Plane through
Horizontal Angle of Maximum Candlepower

Product Dimensions

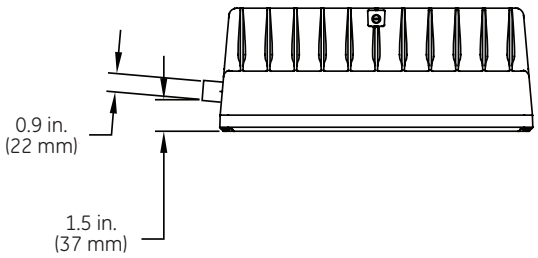
Top/Side View



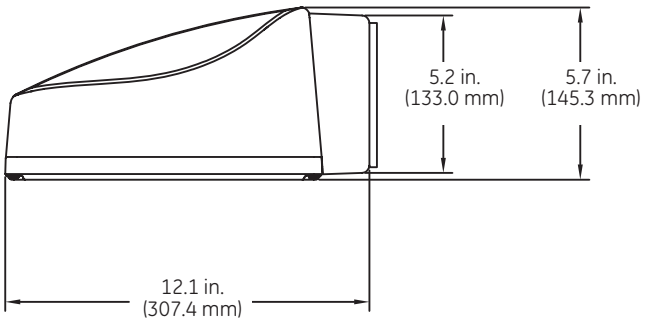
Top View



Front View

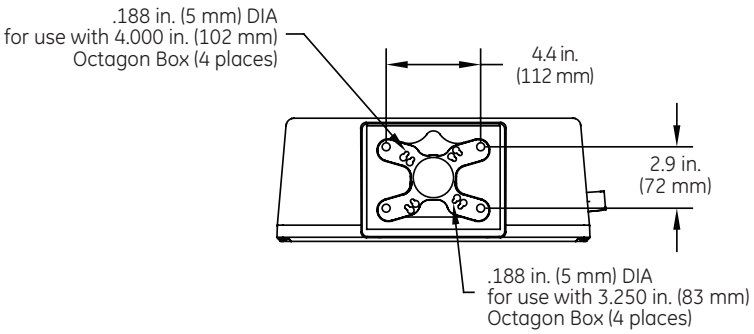


Side View



Product Dimensions

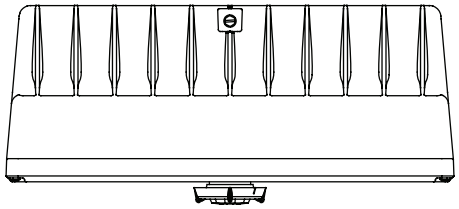
Back View



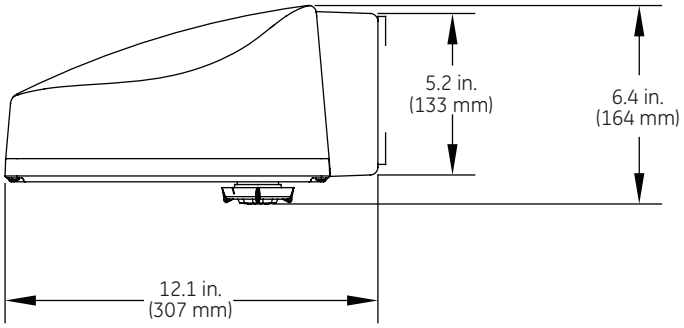
DATA

- Approximate Net Weight: 21 lbs (9.53 kgs)

Front View with Motion Sensor Option



Side View with Motion Sensor Option



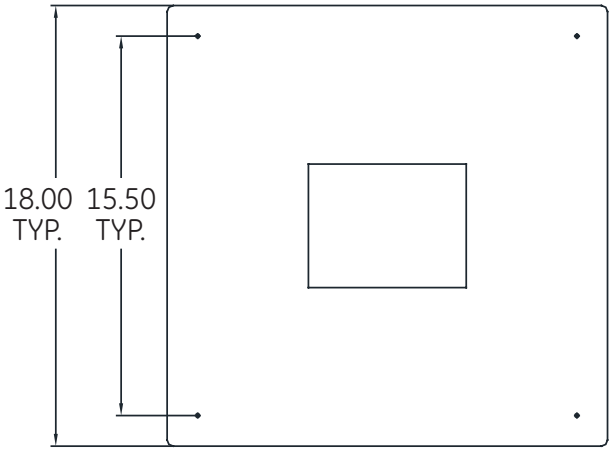
Accessories:

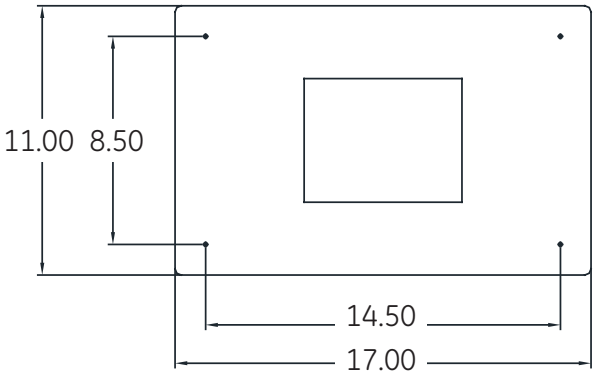
Escutcheon Plates

Cover unsightly debris and marks left behind from replacing HID product with escutcheon plates. Available in square and rectangular sizes, as well as in an assortment of colors to match the luminaire. Accessories are ordered and shipped separately from the luminaire.

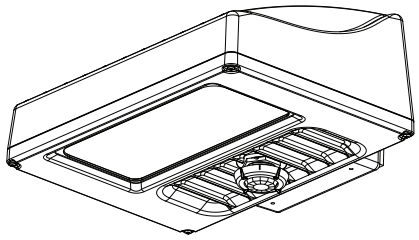
E W N **E** _ ____

PROD. ID	PHOTOMETRIC SERIES	DETAIL	COLOR
E = Evolve **W** = Wall Pack **N** = Housing Series	**E** = Escutcheon Plate	**1** = 17" x 11" **2** = 18" x 18"	**BLCK** = Black **DKBZ** = Dark Bronze **GRAY** = Gray **WHTE** = White RAL custom colors available. Contact Manufacturer.





H-Motion Sensing Option:



- Intended for 8-25ft mounting heights.
- Provides a coverage area radius for walking motion of 25-30ft.
- Provides 180° of coverage (~180° is blocked by the wall).
- Factory preset to 50% dimming with no occupancy.
- May be reprogrammed using additional remote programmer.
  Remote Programmer part number: WS FSIR-100 PROGRAMMER (197634)
- Photoelectric control is integrated through the motion sensor, and is offered as standard.

Sensor Pattern:

Sensing Pattern Wall Pack Fixture
Up to 25ft.

www.currentbyge.com

All trademarks are the property of their respective owners. Information provided is subject to change without notice. All values are design or typical values when measured under laboratory conditions. Current, powered by GE is a business of the General Electric Company.
© 2017 GE.

OLP3115 (Rev 05/04/17)

5.16 Water Resources

This section evaluates potential project impacts from construction and operation of the proposed Corby Battery Energy Storage System (BESS) Project or project with respect to water resources. See **Section 3, Project Description**, of this Staff Assessment for a complete description of the California Energy Commission's (CEC's) Opt-In Certification jurisdictional and non-jurisdictional project components.

5.16.1 Environmental Setting

The proposed project would be located in Solano County and would be constructed on an approximately 40.3-acre privately owned parcel bounded on all sides by existing agricultural lands, with a rural residence located across Kilkenny Road directly to the north. The project proposes to construct a BESS facility on one 40.3-acre parcel within unincorporated Solano County. The project would also construct a 1.1-mile-long 230-kilovolt (kV) gen-tie line and fiber optic cable pathway that would cross up to six parcels. Of the six parcels required for the project, three parcels are located within unincorporated Solano County, and three parcels are located within the City of Vacaville. As discussed in **Section 5.8, Agriculture and Land Use**, the 40.3-acre parcel for the BESS facility is zoned for agriculture. The proposed project would result in the creation of approximately 14 acres of impervious surfaces within a 65.9-acre overall project footprint (Solano County 2025a, Tetra Tech 2026). Depth to groundwater ranges from 7 to 15 ft at the project site (Tetra Tech 2024b).

Stormwater Drainage and Water Quality

Stormwater from the proposed project area would drain into the Gibson Canyon Creek-Sweany Creek area (HU Code: 180201630502) and Upper Ulatis Creek area (HU Code: 180201630503) level 12 Hydrologic Unit Code (HUC) watersheds (DWR 2024).

The project site and surrounding area has been in agricultural use for many decades. There is a very low slope and runoff would likely act as sheet flow rather than channelized flow. There are no jurisdictional waters through the project site and runoff enters drainage ditches bordering the property which then flow into larger streams. The natural runoff from the project site is split between the two watersheds that ultimately conjoin downstream. Sweany Creek flows through HUC 180201630501 before emptying to Ulatis Creek and flowing through Lower Ulatis Creek watershed (HUC 180201630505) until meeting with Cache Slough (HUC 180201630606) and ultimately discharging into the San Francisco Bay Delta. According to the United States Environmental Protection Agency (EPA) website, *How's My Waterway*, Ulatis Creek is listed as impaired and Sweany Creek is listed as "Condition Unknown." The water quality of Ulatis Creek is affected by pathogens and pesticides including chlorpyrifos, bifenthrin, and diuron that are toxic. (USEPA 2025).

Groundwater

The project site is within the Sacramento Valley Groundwater Basin, Solano subbasin (5-

021.66), northeast of the Suisun-Fairfield Valley subbasin (5-021.66), southeast of the Coast Range, southwest of the Yolo subbasin (5-021.67), and northwest of the Eastern San Juaquin subbasin (5-022.01). The Solano subbasin is identified as a medium priority basin (DWR 2020) and is under a Groundwater Sustainability Plan (GSP) overseen by the Solano Collaborative as a formal group of 10 Groundwater Sustainability Agencies (GSAs). The project is under the authority of the Solano Irrigation District (SID) GSA (Luhdorff & Scalmanini 2021).

The aquifers of the Solano subbasin consist of three Tehama Formation zones and two thinner layers of quaternary alluvium. The Tehama formation is later Pliocene to early Pleistocene in age and range in thickness from 1,500 to 2,500 ft. The older of the two alluvial layers is mid to late Pleistocene in age and ranges in thickness from 50 to 130 ft. The younger alluvial layer is of recent age and is generally less than 25 ft but up to 40 ft in thickness (Thomasson 1960). The upper two Tehama zones along with the 2 alluvial zones are used for domestic and irrigation purposes in the unincorporated areas of the County outside the City of Vacaville. According to the SGMA Data Viewer, there are two monitoring wells near that project site measuring approximately 21 ft bgs and 7 ft bgs. This is consistent with the applicant's geotechnical investigation that found water from 15 ft to 7.5 ft bgs. Groundwater flow directions in the Subbasin within the upper unconfined zones tend to be from northwest to southeast away from the Hills towards the Sacramento River Delta. With limited data available for the deeper confined Basal Tehama zone, the water gradients indicate that flow is generally towards the City of Vacaville as a result of historic pumping activities (DWR 2004).

Water levels of the basin are generally considered to be stable with some declining zones in the northwestern area of the subbasin. Hydrographs indicate that uncharacteristically dry years correspond with declining groundwater levels but also that wetter years display recovery. Groundwater is likely available via onsite well but would need to comply with the GSP established by SID as the SGMA GSA.

According to the United States Geological Survey (USGS) Central Valley Subsidence Data Website, there is no significant subsidence in this nor the immediately surrounding subbasins (USGS 2025).

Flooding

The proposed BESS facility parcel is located within Federal Emergency Management Agency's (FEMA) Flood Insurance Rate Maps (FIRMs) panel (# 06095C0168E FEMA 2009) and is within Zone X, outside of a special flood hazard area. The utility switchyard parcel is located north of Interstate 80 (I-80) on the same FEMA FIRM panel 06095C0168E. Approximately five percent of the utility switchyard parcel is within Zone AE, with the remainder in Zone X.

Zone AE is defined as a 1 percent (or 100-year) annual chance floodplain, where no base flood elevations have been determined, while Zone X is defined as areas determined to be outside the 0.2 percent (or 500-year) annual chance floodplain (FEMA

2025).

The project site is not located near the coast and is not within an area mapped as vulnerable to sea level rise in the National Oceanic and Atmospheric Administration's (NOAA) *Digital Coast, Sea Level Rise Viewer* (NOAA 2025).

According to the *Dam Breach Inundation Map Web Publisher,* sponsored by the California Department of Water Resources (DWR), there is one structure, Giles dam, about 4.4 miles northwest of the site that is hydrologically connected to, but would not likely inundate the project site due to failure given the distance away from the project. (DWR 2025a).

The project site does not appear on the Department of Conservation Tsunami Hazard Area Map (DOC 2025). Since the project site is not located near the coast or a large body of water, there is no danger of a tsunami or seiche.

Regulatory

Federal

Clean Water Act and California's Porter-Cologne Water Quality Control Act. The California State Water Resources Control Board (SWRCB) and its nine Regional Water Quality Control Boards (RWQCBs) are responsible for the regulation and enforcement of the water quality protection requirements of the federal Clean Water Act (CWA) and the state's Porter-Cologne Water Quality Control Act (Porter-Cologne). The National Pollutant Discharge Elimination System (NPDES) is the permitting program that allows point source dischargers to comply with the CWA and Porter-Cologne laws. This regulatory framework protects the beneficial uses of the state's surface and groundwater resources for public benefit and environmental protection. Protection of water quality could be achieved by ensuring the proposed project complies with applicable NPDES permits from the SWRCB or the Central Valley RWQCB.

Section 404(a) of the CWA identifies the U.S. Army Corp of Engineers (USACE) as the authority to issue permits for the discharge of fill and dredging material into navigable waters, defined as waters of the United States (CWA Section 502 [7]). Under Section 401(a) of the CWA, any applicant of a permit under the CWA must provide a State certification to the Federal permitting agency. In California, the local RWQCB is the Section 401 certifying agency.

Under Section 303(d) of the CWA, states are required to identify impaired surface water bodies and develop total maximum daily loads (TMDLs) for contaminants of concern. The TMDL is the quantity of pollutants that can be assimilated by a water body without violating water quality standards. According to Section 303(d) List of the Clean Water Act, the Upper Ulatis Creek is listed as impaired with pesticides on the Impaired Waters for California List (USEPA 2024). Listing a water body as impaired does not necessarily suggest that the water body cannot support the beneficial uses; rather, the intent is to identify the water body as requiring future development of a TMDL to maintain water

quality and reduce the potential for future water quality degradation.

Federal Emergency Management Agency Flood Insurance Program. The flood magnitude standard used nationwide for floodplain management is a one percent probability of a flood occurring in any given year, also known as the 100-year flood, or base flood. FIRM, the official map created and distributed by FEMA for the National Flood Insurance Program shows areas subject to inundation by the base flood for participating communities. FIRMs contain flood risk information based on historic, meteorologic, hydrologic, and hydraulic data, as well as open-space conditions, flood control works, and development. As stated above, the majority of the project site is not located within a 100-year flood hazard zone. However, a small portion of the substation parcel is located within a 100-year flood zone.

State

Sustainable Groundwater Management Act (AB 1739, SB 1168 & SB 1319). The 2014 Sustainable Groundwater Management Act (SGMA) requires local public agencies and Groundwater Sustainability Agencies (GSAs) in high and medium priority basins to develop and implement Groundwater Sustainability Plans (GSPs) or Alternatives to GSPs. GSPs are detailed road maps for how groundwater basins would be managed to reach long-term sustainability.

Executive Order N-7-22. In response to extreme and expanding drought conditions in California, the Governor issued Executive Order N-7-22 in March of 2022. Among other water resource considerations, EO-7-N-22 prohibits counties, cities, and other public agencies from approving permits for either the construction of new groundwater wells or the alteration of existing wells that are within a Sustainable Groundwater Management Act-regulated medium or high-priority groundwater basin unless:

1. the Groundwater Sustainability Agency managing the basin verifies in writing that the proposed groundwater extractions would
    a. be consistent with any applicable Groundwater Sustainability Plan, and
    b. not decrease the likelihood of achieving a sustainability goal for the basin; and
2. the well-permitting agency determines that extraction of groundwater from the proposed or modified well is not likely to
    a. interfere with the production and functioning of existing nearby wells, or
    b. cause subsidence that would adversely impact or damage nearby infrastructure.

In the event that the Solano Irrigation District is unable to meet project water supply needs, then the applicant proposes to develop an onsite groundwater well to serve construction and temporary landscape irrigation needs. If a groundwater well is needed, then EO N-7-22 would apply since the Westland Subbasin is defined as a high priority groundwater basin. The GSAs for the groundwater basin, would need to verify that stated conditions are met with respect to groundwater and that the new well would be consistent with the Westland Subbasin GSP.

California Water Code, Section 13800 and DWR Bulletins 74-81 & 74-90. This section of the California Water Code authorized DWR to establish water well construction standards and delegate permitting authority to local jurisdictions. DWR presents well construction standards in bulletins 74-81 (DWR 1981) and 74-90 (DWR 1991).

California Water Code, Section 13750.5. This section of the California Water Code requires that any contractor drilling and constructing a water well should possess a valid C-57 Water Well Contractor's License.

Local

Solano County General Plan. The Solano County General Plan includes the following goals and policies for water resources and quality applicable to the project (Solano County 2024a):

- Chapter Four:
  - **Goal 10:** Foster sound management of the land and water resources in Solano County's watersheds to minimize erosion and protect water quality using best management practices and protect downstream waterways and wetlands.
- Chapter Five:
  - **Goal 1:** Minimize risk to property and protect lives from flood hazards.
- Chapter nine:
  - **Goal RS.G-1:** Manage and preserve the diverse land, water, and air resources of the county for the use and enrichment of the lives of present and future generations
  - **Goal RS.G-9:** Protect, monitor, restore and enhance the quality of surface and groundwater resources to meet the needs of all beneficial uses.
  - **Goal RS.G-10:** Foster sound management of the land and water resources in Solano County’s watersheds to minimize erosion and protect water quality using best management practices and protect downstream waterways and wetlands.
  - **Policy RS.P-8:** Protect marsh waterways, managed wetlands, tidal marshes, seasonal marshes, and lowland and grasslands because they are critical habitats for marsh-related wildlife and are essential to the integrity of the marshes.
  - **Policy RS.P-64:** Identify, promote, and seek funding for the evaluation and remediation of water resource or water quality problems through a watershed management approach. Work with the regional water quality control board, watershed-focused groups, and stakeholders in the collection, evaluation and use of watershed-specific water resource information.
  - **Policy RS.P-65:** Require the protection of natural water courses.

- **Policy RS.P-70:** Protect land surrounding valuable water sources, evaluate watersheds, and preserve open space lands to protect and improve groundwater quality, reduce polluted surface runoff, and minimize erosion.
- **Policy RS.P-73:** Use watershed planning approaches to resolve water quality problems. Use a comprehensive stormwater management program to limit the quantity and increase the water quality of runoff flowing to the county's streams and rivers.
- **Policy RS.P-75:** Require and provide incentives for site plan elements (such as permeable pavement, swales, and filter strips) that limit runoff and increase infiltration and groundwater recharge.
- **Policy RS.P-76:** Promote sustainable management and efficient use of agricultural water resources.

Solano County Code:

Chapter 12.2 Flood Damage Prevention. This County Code provides standards of construction to reduce the impacts of flooding in FEMA special flood hazard zones.

Chapter 13.10 Well Standards. These County Codes establish the requirements for the construction, repair, reconstruction, change of use or destruction of any well used for domestic, industrial, commercial or agricultural purposes.

Chapter 31 Grading and drainage permit requirement. These county codes define the means for controlling soil erosion, sedimentation, increased rates of water runoff and related environmental damage by establishing minimum standards and providing regulations for the construction and maintenance of fills, excavations, cuts and clearing of vegetation, revegetation of cleared areas, drainage control, and the protection of exposed soil surfaces in order to protect downstream waterways and wetlands and to promote the safety, public health, convenience and general welfare of the community.

Vacaville City Plan. The Vacaville General Plan includes the following goals and policies for water resources and quality applicable to the project (Vacaville 2015):

- **Goal COS-2:** Preserve and restore Vacaville's creeks.
  - **Policy COS-P2.2:** Protect existing stream channels and riparian vegetation by requiring buffering or landscaped setbacks and storm runoff interception
- **Goal COS-13:** Promote water conservation as an important part of a long-term and sustainable water supply.
  - **Policy COS-P13.3:** Prohibit development that would adversely affect the City's well field
  - **Action COS-A13.2:** Continue to implement the City's water-efficient-landscape requirements, which address the use of drought-tolerant plant materials and irrigation standards.

- **Goal COS-14:** Protect the quality and supply of surface water and groundwater resources.
  - **Policy COS-P14.1:** Protect the Alamo, Encinosa, Gibson, and Ulatis Creek watersheds by minimizing point and nonpoint source pollutants.
  - **Policy COS-P14.2:** Integrate City planning and programs with other watershed planning efforts, including Best Management Practices (BMPs), guidelines, and policies of both the Sacramento and San Francisco Bay Regional Water Quality Control Boards.
  - **Policy COS-P14.5:** Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from construction or from new impervious surfaces
  - **Policy COS-P14.5:** Require the implementation of Best Management Practices (BMPs) to minimize erosion, sedimentation, and water quality degradation resulting from construction or from new impervious surfaces

5.16.2 Environmental Impacts

WATER RESOURCES Would the project:	**Significant and Unavoidable Impact**	**Less Than Significant with Mitigation Incorporated**	**Less Than Significant Impact**	**No Impact**
a. Violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?	☐	☒	☐	☐
b. Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?	☐	☐	☒	☐
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:				
i. result in substantial erosion or siltation, on- or offsite;	☐	☒	☐	☐
ii. substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;	☐	☒	☐	☐
iii. create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or	☐	☒	☐	☐

WATER RESOURCES Would the project:	Significant and Unavoidable Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
iv. impede or redirect flood flows?	☐	☐	☐	☒
d. In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?	☐	☐	☐	☒
e. Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?	☐	☐	☒	☐
f. Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?	☐	☐	☒	☐
g. Result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	☐	☐	☐	☒

Environmental checklist established by Cal. Code Regs., tit. 14, Div. 6, Ch. 3, Appendix G, hydrology and water quality and utilities and service systems.

5.16.2.1 Methodology and Thresholds of Significance

In addition to the above environmental checklist, staff used the following methodology and thresholds of significance to evaluate the project.

Methodology

The California Environmental Quality Act (CEQA) guidelines, Appendix G, provide a checklist of questions that lead agencies typically address when assessing impacts related to water resources (or hydrology and water quality in CEQA). To assess potential impacts concerning water resources, staff has reviewed online sources of maps, literature and information of the surrounding area, as well as site-specific information provided by the project applicant.

5.16.2.2 Direct and Indirect Impacts

a. Would the project violate water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?

Construction

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, the project's construction would not violate water quality standards or otherwise

substantially degrade surface or ground water quality with the implementation of COC **WATER-1**. The potential impact is less than significant with mitigation incorporated.

The project would disturb up to 65.9 acres of land during construction and be subject to construction-related stormwater requirements of the Construction General Permit. Prior to any ground-disturbing construction activity, the applicant would prepare a construction Stormwater Pollution Prevention Plan (SWPPP) to comply with the Construction General Permit per condition of certification (COC) **WATER-1**. With the implementation of the SWPPP, development of the site would not cause substantial degradation in the quality, or an increase in the rate or volume, of stormwater runoff during construction.

The first encountered groundwater was discovered at 7.5 feet below ground surface (bgs). If groundwater is encountered during excavation activities dewatering would be necessary. If dewatering discharge is found to be uncontaminated, the project owner would be allowed to discharge dewatering water to waters of the US under the Construction General Permit. If the discharge is found to be contaminated, a special permit through the Central Valley RWQCB would be necessary depending on the nature of the contamination, requiring the applicant to treat the water before discharging or hauling away the untreated water by a permitted service provider.

The non-jurisdictional project components that would create significant ground disturbance is the approximately 0.1-mile long segment of a new 230-kV gen-tie line from the POCO to the POI within Vaca-Dixon Substation that would be installed by Pacific Gas & Electric Company (PG&E). By initiating Regional Water Quality Control Board NPDES permitting per **MM WATER-1** and implementing an Erosion and Sediment Control Plan per Mitigation Measure **MM WATER-2**, the risk to water quality would be less than significant with mitigation.

During project construction, temporary toilet and sanitary facilities would be provided and served by a third-party contractor. Therefore, the project would not be expected to violate water quality standards or waste discharge requirements during construction, and impacts would be less than significant with mitigation.

Operation

Less Than Significant Impact with Mitigation Incorporated. Based on the analysis below, the project's operation would not violate water quality standards or otherwise substantially degrade surface or ground water quality with the implementation of COC **WATER-2**. The potential impact is less than significant with mitigation incorporated.

A project operations Drainage, Erosion, and Sedimentation Control Plan (DESCP) would be prepared to monitor stormwater events and associated BMPs per COC **WATER-2**. During project operations, temporary toilet and sanitary facilities would be provided and serviced by a third-party contractor on an as-needed basis and would therefore not produce wastewater.

Once constructed, the project would result in approximately 14 acres of impervious surface (Tetra Tech 2024b). The project proposes to control stormwater runoff in the BESS facility parcel during substantial rain events by constructing ditches around the property that feed into 2 detention basins at the north and south of the BESS facility parcel where the water would be stored.

In the event of an emergency such as a fire that would produce contaminated water, there is a risk that the shallow groundwater aquifer could be subject to an accidental release of hazardous material or other material that would violate water quality standards. Per **WATER-5**, a Water Quality Control Plan (WQCP) would be developed that would address best management practices for prevention and mitigation in the event of a release. In addition, a Post BESS Fire Monitoring and Management Plan that establishes baseline data of existing water and sediment, post fire monitoring and decontamination methods would be developed per **BIO-21**.

The non-jurisdictional project components are not likely to cause impacts to water quality during project operation. The Vaca Dixon substation has an existing ESCP that addresses impacts from the substation surface water runoff.

The project would not be expected to violate water quality standards or waste discharge requirements during operation, and impacts would be less than significant with mitigation.

b. Would the project substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?

Construction

Less Than Significant Impact with Mitigation. The project proposes to use 30 acre-feet (AF) of water for construction. The project has proposed to use water from Solano Irrigation District (SID), however, no agreement has been reached for the procurement of this water. The alternative source would be groundwater if SID is not an available source.

If necessary, a groundwater production well would be installed within the project area in accordance with State water well standards (DWR 1981, DWR 1991) and Solano County ordinance to comply with COC **WATER-3**.

According to the GSP for the Solano Subbasin, groundwater storage has been stable to increasing and is not projected to decline. The total estimated annual groundwater extraction from the basin is approximately 180,000 AFY. Therefore, the 30 AFY proposed by the project is minimal and there is very little potential impact to the aquifers long term storage. COC **WATER-4** includes quantity limitations and reporting requirements for water use during the project construction and operation.

With incorporation of the conditions detailed in COC **WATER-3** and **WATER-4**, as well as compliance with SGMA, the project would not be expected to overdraft local groundwater resources, and therefore impacts would be less than significant with mitigation incorporated.

The non-jurisdictional project components do not propose to substantially alter infiltration to groundwater and therefore impacts to groundwater recharge would be less than significant during construction.

Operation

Less Than Significant Impact with Mitigation. Operational water would be 2 AF per year (AFY) for the establishment of drought tolerant landscaping only, which would be decreasing by 20 to 30 percent annually through year five after which operational water is proposed to be zero. Water for operation would be from the same source as construction water, either purchased water from SID or groundwater from a new on-site well.

The project proposes two unlined stormwater detention basins designed to retain the 10-year-24-hour storm volume and control flows including the 100-year-24-hour storm. These ponds would also facilitate infiltration to the groundwater aquifer; therefore the proposed project would not significantly impact groundwater recharge.

With incorporation of the conditions detailed in COC **WATER-4**, the above-described retention pond, as well as compliance with SGMA, the operation of the project would not be expected to overdraft local groundwater resources, and therefore impacts would be less than significant with mitigation incorporated.

Non-Jurisdictional Project Components

Less Than Significant Impact. The non-jurisdictional project components do not propose to substantially alter infiltration to groundwater and therefore impacts to groundwater recharge would be less than significant during operation.

c. Would the project substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or through the addition of impervious surfaces in a manner which would:

i. Result in substantial erosion or siltation, on- or offsite;

Construction and Operation

Less Than Significant Impact with Mitigation. As discussed in criteria “a,” the impact of erosion during project construction would be addressed by the SWPPP prepared as part of the Construction General Permit requirement described in **WATER-1**. During operations stormwater runoff from the project facilities would be addressed by the project operations DESCP prepared per **WATER-2**.

The project would not be expected to cause substantial erosion during either construction or operation, and impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

Less Than Significant Impact. The non-jurisdictional project components do not propose to substantially alter the drainage pattern of the project area nor add impervious surfaces and therefore the impact would be less than significant.

ii. Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;

Construction

Less Than Significant Impact with Mitigation. As discussed in criteria "a," the impact of offsite flooding due to surface water runoff from construction activities would be addressed by the SWPPP prepared by requirement of the Construction General Permit (per COC **WATER-1**).

Operation

During operations, stormwater runoff within the project area would be captured by the detention basins and would be further addressed by the project operations DESCP prepared per COC **WATER-2**.

The project would not be expected to cause off-site flooding due to surface water runoff during construction or operation, and impacts would be less than significant with mitigation.

Project Components

Less Than Significant Impact. The non-jurisdictional project components do not propose to increase the impervious surface area, and therefore the rate or amount of surface runoff, of the project during construction or operation and therefore the impact would be less than significant.

iii. Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems or provide substantial additional sources of polluted runoff; or

Construction and Operation

Less Than Significant Impact with Mitigation. Currently, a system of ditches at the perimeter of the project site is in place as part of the agricultural infrastructure to drain tailwater. However, as discussed in criteria "a" above, stormwater runoff during construction would be minimized by the practices employed per the Construction General Permit SWPPP (per COC **WATER-1**). During operation, stormwater runoff from project facilities would be addressed by the project operations DESCP prepared per COC **WATER-2**.

As stated in criteria "a," above, WATER-5 would address polluted runoff in the event of an emergency situation such as a thermal runaway fire of the battery system. A Water Quality Control Plan (WQCP) would be developed to include best management practices and procedures for mitigating contaminated water from entering the groundwater aquifer or surface water.

Non-Jurisdictional Project Components

Less Than Significant Impact. The non-jurisdictional project components do not propose elements that would increase the rate of runoff so would not affect the capacity of planned or existing stormwater drainage. As discussed in criteria "a," above, water quality impacts due to runoff during construction would be mitigated by **MM WATER-2**.

The project would not be expected to create surface water runoff that would exceed stormwater drainage capacity either during construction or operation, and impacts would be less than significant with mitigation.

iv. Impede or redirect flood flows?

Construction and Operation

Less Than Significant Impact with Mitigation. The proposed main project area is located within FEMA flood insurance rate map panel 06095C0168E (FEMA 2009a). The project comp is within Zone X, outside of a special flood hazard area. The utility switchyard parcel north of Interstate 80 located on FEMA FIRM panel 06095C0168E. Approximately five percent of the utility switchyard parcel is within Zone A, with the remainder in Zone X. Zone A is defined as areas subject to a 1 percent annual chance (or 100-year recurrence) floodplain, while Zone X is defined as areas determined to be outside the 0.2 percent annual chance (or 500-year recurrence) floodplain (FEMA 2009 & FEMA 2025). As discussed in criterion "a", flood water flow would be addressed during construction by COC **WATER-1**, and during operation by COC **WATER-2**.

Therefore, the project would not be expected to impede or redirect flood water flow either during construction or operation, and impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

The utility switchyard, which is non-jurisdictional , contains a small portion designated by FEMA as Zone A as discussed in criterion c. Staff assumes the existing PG&E Vaca Dixon Substation was designed, graded, and constructed in compliance with applicable LORS, including the CBC and Solano County Code, and thus mitigated potential impacts from flood risk.

d. Would the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?

Construction and Operation

No Impact. As described in the environmental setting above, none of the jurisdictional project components are within a special flood hazard area Zone A or lies within a 100-year floodplain. According to DWR's *Dam Breach Inundation Map Web Publisher* (DWR 2025a), there are no local flood control structures that are a risk to inundate the project area. The project site is not located near the coast or a large body of water, therefore there is no danger of a tsunami, seiche, or vulnerability to sea level rise.

Non-Jurisdictional Project Components

The utility switchyard, which is non-jurisdictional , contains a small portion designated by FEMA as Zone A as discussed in criterion c. Staff assumes the existing PG&E Vaca Dixon Substation was designed, graded, and constructed in compliance with applicable LORS, including the CBC and Solano County Code, and thus mitigated potential impacts from flood risk.

e. Would the project conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?

Construction and Operation

Less Than Significant Impact with Mitigation. As discussed in criterion "b," project construction water demand of 30 AF and the operational water demand of less than 2 AFY would be either groundwater or provided through a purchase option agreement with SID. The purchase agreement with SID as well as tracking construction/operations water demand are addressed under COC **WATER-4**. Groundwater production well would be installed within the main project site in accordance with State water well standards (DWR 1981, DWR 1991) and Solano County ordinance to comply with COC **WATER-3**. SGMA establishes a framework to manage groundwater resources in a sustainable manner and the applicant would be in compliance with the local GSA (Solano Basin) and implementation of SGMA.

With incorporation of the conditions detailed in COC **WATER-3** and **WATER-4**, as well as compliance with SGMA, the project would not be expected to overdraft local groundwater resources, and impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

Construction

Less Than Significant Impact. The gen-tie transmission line between the POCO and the Vaca Dixon substation would be under PG&E jurisdiction. During construction of the PG&E controlled gen-tie transmission lines, soil disturbance would be restricted to the area under the transmission lines and water use for dust suppression would be minimal. Therefore, the impact to groundwater extraction from the Solano basin would be negligible and would not impede sustainable groundwater management efforts.

Operation

No Impact. Soil disturbance would not occur during the operation of the PG&E controlled gen-tie transmission lines. Therefore, groundwater extraction from the Solano basin would not occur and sustainable groundwater management efforts would not be impeded.

f. Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?

Construction and Operation

Less Than Significant Impact with Mitigation. As discussed in criteria "b" and "e," water for project construction would be by means of a purchase option agreement with SID or by constructing a groundwater well on-site. The purchase agreement with SID or the well construction, as well as tracking construction/operations water demand would be addressed under COC **WATER-4**. The groundwater production well would be installed in accordance with State water well standards (DWR 1981, DWR 1991) and Solano County ordinance to comply with COC **WATER-3**. The water use proposed by the project is minimal. During project operation the water use would be close to zero when drought tolerant landscaping is established. In addition, the transition of land use from agriculture to battery storage would reduce the demand on the local aquifer relative to historic use.

With incorporation of COC **WATER-4**, as well as compliance with SGMA, the proposed water supply would adequately serve the project and resulting impacts would be less than significant with mitigation.

Non-Jurisdictional Project Components

Construction

Less Than Significant Impact with Mitigation. During construction of the PG&E controlled gen-tie transmission lines, soil disturbance would be restricted to the area under the transmission lines and would be minimal. With the incorporation of recommended mitigation measure **MM WATER-1**, construction would be expected to not to alter drainage patterns or add impervious areas that would result in substantial erosion or siltation.

Operation

No Impact. Soil disturbance would not occur during the operation of the PG&E controlled gen-tie transmission lines. Therefore, altered drainage patterns or the addition of impervious areas that would result in substantial erosion or siltation would not occur.

g. Would the project result in a determination by the wastewater treatment provider which serves or may serve the project that it has inadequate capacity to serve the project's projected demand in addition to the provider's existing commitments?

Construction and Operation

No Impact. Due to the rural location, no wastewater treatment provider is available to serve the project. During construction and operation, temporary sanitary facilities would be used. Therefore, project construction and operation would not result in a wastewater treatment impact.

5.16.2.3 Cumulative Impacts

Vaca Dixon Power Center Project

The Vaca Dixon Power Center Project (VDPCP) is a 57 MWh BESS system on a ten acre parcel next to Interstate 80, less than 1 mile from the Corby BESS project. According to the project application, water would be supplied by the City of Vacaville. Over the 24 month construction period, water use is expected to be a maximum of 11.2 AF or 5.6 AFY. During operation the expected water usage for landscape irrigation and fire suppression would be .03 AFY. Based on these quantities the VDPCP is expected to have a less than significant impact on local water supply.

The Farm at Alamo Creek and The Fields at Alamo Creek developments

The Farm at Alamo Creek (the Farm) is a planned housing development on 210.5 acres of land with 768 homes, parks and trails, and neighborhood commercial use that completed a Draft Environmental Impact Report (DEIR) in 2018 (Dudek 2018). The Fields at Alamo Creek (the Fields) adds 33.6 acres to the Farm project plan with an additional 241 homes with additional park and open space and completed a Supplemental EIR in 2024, also with the city of Vacaville as lead agency (Dudek 2024). Potable water would be provided by the City of Vacaville. The potential impact to water supply was determined to be less than significant.

Midway Plaza

Midway plaza is a 17.8-acre development which would include a gas station, convenience store, and restaurant. According to the Initial Study (IS) prepared by Solano County, potable water would be provided by an on-site well that would be permitted by the California Division of Drinking Water (Solano County 2025b). The potential impact to water supply was determined to be less than significant.

Transwestern Ventures Life Science Project

Transwestern Ventures Life Science Project would be a 22.4-acre life science manufacturing facility that includes 3 buildings, a parking lot and landscaping. According to the Modified Initial Study (MIS), potable water would be provided by the

City of Vacaville. The potential impact to water supply was determined to be less than significant (Stantec 2022).

The City of Vacaville uses both surface water and groundwater for its supply, therefore each of the four projects above would use groundwater. Unfortunately, the environmental documents available on the City of Vacaville and County of Solano planning websites did not quantify the expected water usage of the projects and only stated that the impacts to water supply were less than significant. As stated in section 5.16.2.2, this BESS project would use only 30 AF for construction and 2 AFY or less for operation from a groundwater supply that is seen as relatively stable and abundant. Therefore, the cumulative impact this project in combination with the other local projects on local groundwater resources would be less than significant.

5.16.3 Project Conformance with Applicable LORS

Table 5.16-1 below details staff's determination of conformance with applicable LORS, including any proposed COCs, where applicable, to ensure the jurisdictional project components would conform with LORS. As shown in this table, CEC staff concludes that with implementation of specific COCs, the proposed project would be consistent with all applicable LORS. The subsection below, "Proposed Conditions of Certification," contains the full text of the referenced COCs.

TABLE 5.16-1 CONFORMANCE WITH APPLICABLE LORS

Applicable LORS	Conformance and Basis For Determination
Federal	
Clean Water Act, U.S. Code § 1342 (b) allows states to establish programs to issue NPDES permits.	**Yes.** During construction of the project, a storm water permit would be obtained under the General Construction NPDES program administered by the SWCRB and Central Valley RWQCB as described in **WATER-1** per authority granted under U.S. Code § 1342 (b).
Federal Emergency Management Agency Flood Insurance Program	**Yes.** All of the jurisdictional project components are located within Zone X, outside of a special flood hazard area.
State	
Sustainable Groundwater Management Act (AB 1739, SB 1168 & SB 1319)	**Yes.** The water supply for construction and operation may be groundwater produced from the project property. The use and supply would comply with applicable regulations promulgated by the Solano Basin GSA under SGMA. The use would be verified per **WATER-4**.
California Well Standards, Bulletins 74-81 and 74-90: State well installation standards	**Yes.** Groundwater production wells would be installed in accordance with California well standards per **WATER-3**.
Local	
Solano County General Plan: Chapter 5 Minimize risk to property and protect lives from flood hazards	**Yes.** The project is not within a flood hazard zone. **WATER-1** and **WATER-2** address requirements for the protection of water quality and **WATER-4** requires water use reporting to protect the local resources.

TABLE 5.16-1 CONFORMANCE WITH APPLICABLE LORS	
Applicable LORS	**Conformance and Basis For Determination**
Chapter 4 and 9 Goals and policies for water resources and quality Solano County Ordinance: Chapter 13.10 Requirements for the construction well used for domestic, industrial, commercial or agricultural purposes. Chapter 31 Requirements for drainage and grading permits. Vacaville General Plan: Goal COS-2 Preserve and restore Vacaville's creeks Goal COS-13 Promote water conservation as an important part of a long-term and sustainable water supply Goal COS-14 Protect the quality and supply of surface water and groundwater resources.	**Yes.** Groundwater production wells would be installed in accordance with Solano County Well standards per **WATER-3**. **Yes.** Drainage permits would be addressed by requirements in **WATER-1** and **WATER-2**. **Yes. WATER-1** and **WATER-2** address requirements for the protection of water quality and **WATER-4** requires water use reporting to protect the local resources.

5.16.4 Conclusions and Recommendations

As discussed above, with implementation of conditions of certification, the project would have a less than significant impact related to water resources and would conform with applicable LORS. Staff recommends adopting the conditions of certification as detailed in subsection “5.16.5 Proposed Conditions of Certification” below. The conditions below are enforceable as part of the CEC's certificate for the portions of the project constituting the site and related facilities.

5.16.5 Proposed Conditions of Certification

The following proposed Conditions of Certifications include measures to ensure conformance with applicable LORS.

NPDES CONSTRUCTION PERMIT REQUIREMENTS

WATER-1 The project owner shall manage stormwater pollution from project construction activities by fulfilling the requirements contained in State Water Resources Control Board’s NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (General Permit) (Order No. 2022-0057-DWQ, NPDES No. CAS000002) and all subsequent revisions and amendments. Among the requirements of the General Permit, the project owner shall file permit registration documents electronically using the Stormwater Multiple Applications and Report Tracking Systems (SMARTS), submit a Notice of Intent (NOI), and develop and implement a construction Stormwater Pollution Prevention Plan (SWPPP) for the construction of the project

(Construction SWPPP). The SWPPP shall include all applicable best management practices (BMPs) for the project construction activities conducted in the local environment. The SWPPP must be prepared by a State-Qualified SWPPP Developer (QSD).

Verification: At least thirty (30) days prior to site mobilization, the project owner shall submit to the Compliance Project Manager (CPM) proof that the construction permit was granted and that a waste discharge identification number (WDID) was issued by the SWRCB. Within ten (10) days of its mailing or receipt, the project owner shall submit to the CPM any correspondence between the project owner and the SWRCB or the Central Valley Regional Water Quality Control Board (CVRWQCB) concerning the General Permit. This information shall include the NOI, the notice of termination, and any updates to the construction SWPPP. The project owner shall notify the CPM in writing of any reported non-compliance and include these in the annual compliance report. Any monitoring documentation associated with the SWPPP shall be included in the annual compliance report.

OPERATIONS DRAINAGE, EROSION AND SEDIMENTATION CONTROL PLAN

WATER-2 Prior to commencing project operations, the project owner shall obtain CPM approval of a site-specific operations Drainage, Erosion and Sedimentation Control Plan (DESCP) that addresses all project elements of stormwater management during project operations. The DESCP shall include the following:

- Discussion, site maps, plans and applicable BMPs demonstrating how stormwater and sediment erosion shall be managed during project operation.
- Final design and rational of detention basins proposed for the 16 drainages areas.
- Discussion of BMPs deployment and materials management practices at the project site.
- Discussion and schedule of BMP inspections, storm event monitoring, and stormwater management structure maintenance.

Verification: At least thirty (30) days prior to project operation, the project owner shall submit a copy of the Operations DESCP to the CPM for review and approval. The project owner shall notify the CPM in writing of any reported non-compliance and include these in the annual compliance report. Any monitoring documentation associated with the DESCP shall be included in the annual compliance report.

GROUNDWATER PRODUCTION WELL INSTALLATION

WATER-3 To utilize groundwater as operational water supply, production well(s) shall be installed adjacent to the proposed O&M facility. To accomplish this, the project owner shall apply for a well installation permit from the Solano County

Environmental Health Division (SCEHD). The groundwater production well(s) shall be installed and constructed per applicable California Water Code section, as well as DWR standards presented in bulletins 74-81 and 74-90, as well as applicable SCEHD well installation requirements.

Verification: At a frequency determined by the CPM, the project owner shall keep the CPM appraised of all aspects of production well installation. The project owner shall provide the CPM with a copy of the well installation permit. The project owner shall file a well completion report to DWR for the extraction well. Any testing results or correspondence exchanged between the project owner and the California Department of Health Services or the SCEHD during operations shall be provided to the CPM in the annual compliance report. All results and diagrams associated with groundwater production well installation shall be included in the annual compliance report.

WATER USE AND REPORTING

WATER-4 Water supply for project construction and operation shall be either purchased water from SID or groundwater beneath the project property. If a water supply agreement with SID is made, the project owner shall provide the CPM with a copy of the agreement. The project owner shall not exceed a water demand of 30 acre-feet per year (AFY) during project construction and 2 AFY during operation. The project owner shall record daily water use for the project's construction and operation. The project owner shall comply with the water use limits and reporting requirements described below.

Verification: During project construction, the monthly compliance report shall include a summary of monthly water use. The project's annual compliance report shall include a monthly and annual summary of water use identifying construction or operations and water source.

WATER QUALITY CONTROL PLAN

WATER-5 The project owner shall prepare a Water Quality Control Plan (WQCP) that identifies the potential impact and mitigation of an accidental discharge of materials that would violate water quality standards. The WQCP shall include best practice measures to prevent surface- and ground-water contamination in the event of any accidental release of contaminants such as battery runaway fire.

Verification: No later than 30 days prior to start of project construction, the project owner shall submit a (WQCP) to the CPM for review and approval. If an unauthorized discharge occurs, the project owner shall notify the Solano County Operations of Emergency Services (OES) according to the Solano County CUPA Operation Area Plan for Emergency Response to Hazardous Materials Incidents (Solano County 2020). The project owner shall also notify the CPM and shall submit to the CPM any correspondence between the project owner and any regulatory agencies concerning monitoring and cleanup actions.

5.16.6 Recommended Mitigation Measures

For the non-jurisdictional components of the project, the following mitigation measures can and should be adopted by the agency with permitting authority over those components consistent with California Code of Regulations title 14, section 15091(a)(2).

GROUND DISTURBANCE

MM WATER-1 If additional staging is required that is not in an established maintenance yard, on pavement, or in any other location not included in the disturbance acreage above and causes >0.9 acres of cumulative project disturbance, a Stormwater Pollution Prevention Plan (SWPPP) will be required. If a SWPPP is required then no soil disturbance is permitted until a Waste Discharge Identification Number (WDID#) is received from the Central Valley Regional Water Quality Control Board (CVRWQCB), and construction must follow all measures and install all BMPs as required and applicable in the SWPPP.

STORMWATER MANAGEMENT

MM WATER-2 Activity-Specific Erosion and Sediment Control Plans (A-ESCPs) must be followed by crews during construction activities.

- The A-ESCP documents shall be kept on-site by the onsite Construction Representative for the duration of the Project.
- To aid in stormwater compliance assessment, the construction crew is expected to identify changes in access routes or other potential soil disturbing activities, as well as laydown yards/staging areas, and communicate those to the PG&E Environmental Lead as soon as possible prior to the planned start date.
- Notify the PG&E Environmental Lead if the project is expected to begin sooner than originally anticipated.
- BMPs may be installed by the contractor, PM, field crew, or a BMP field crew designated by the PG&E Environmental Field Specialist (EFS)/Water Quality Subject Matter Expert (WQ SME). Please coordinate with the Environmental Lead for direction based on your LOB's direction. The installation of stormwater construction BMPs is required prior to the start of construction activities for the work area.
- Additional BMPs may be required for temporarily inactive sites and prior to rain events.
- PG&E's Environmental Management team recommends that native topsoil (0-12 inches) be conserved to maintain the natural seed bank. PG&E topsoil stockpile kits can be made available to construction crews by personnel designated by the WQ SME.
- Sloped areas may require the installation of biodegradable jute netting and/or slope breaks with biodegradable fiber roll to reduce erosion.

- Construction field crews will be responsible to inspect and maintain stormwater construction BMPs daily throughout the duration of the project. For BMP guidance, please reach out to the PG&E Environmental Lead.
- Non-Biodegradable Stormwater construction BMPs, as well as all equipment and materials, must be removed at the end of the project.
- Biodegradable BMPs may be left in place at the end of the project, as needed.
- Site restoration may be required to close out permits and/or agreements associated with the project.
- Construction field crews are responsible to complete hardscape restoration (backfill excavations, meet compaction requirements, and complete final paving) prior to demobilization.
- Construction field crews may be responsible to complete softscape restoration within 14 days following demobilization. If construction field crews need assistance, reach out to the Environmental Lead.
- Vegetated areas shall be stabilized using a PG&E approved weed-free seed mix. Project-specific seed requirements may be required and should be evaluated by the project biologist.
- Applicable Stormwater Management A-ESCPs are attached, and include:
  - Good Housekeeping A-ESCP;
  - Pole Replacement A-ESCP, and
  - Stockpile Management A-ESCP.

CONSTRUCTION DEWATERING

MM WATER-3 Dewatering of trenches or excavations may be required, the Environmental Lead/Project EFS shall be notified at least 30 days in advance to ensure the appropriate dewatering methods are used, proper notifications are made, and, if necessary, applicable authorizations/permits are obtained. All dewatering activities must be coordinated through the Environmental Lead/Project EFS throughout the duration of the project.

5.16.7 References

DOC 2025 – Department of Conservation (DOC). Tsunami Hazard Area Map. State of California, 2021. produced by the California Geological Survey and the California Governor's Office of Emergency Services; Available online at: https://www.conservation.ca.gov/cgs/tsunami/maps

Dudek 2018 – Dudek. Draft Environmental Impact Report for The Farm at Alamo Creek Specific Plan Project. Prepared for City of Vacaville Planning Division February 2018. Available online at:

https://www.cityofvacaville.gov/home/showpublisheddocument/10381/636559259355170000

Dudek 2024 – Dudek. Draft Supplemental Environmental Impact Report for The Farm at Alamo Creek Project. Prepared for the City of Vacaville February 2024. Available online at: https://www.cityofvacaville.gov/home/showpublisheddocument/23131/638435091896270000

DWR 1981 – Department of Water Resources (DWR). Water Well Standards: State of California Bulletin 74-81. December 1981. Available online at: https://www.countyofglenn.net/sites/default/files/Environmental_Health/WP_DWR_Bulletin_74-81.pdf

DWR 1991 – Department of Water Resources (DWR). California Well Standards, Water Wells, Monitoring Wells, Cathodic Protection Wells, Bulletin 74-90 (Supplement to Bulleting 74-81). June 1991. Available online at: https://www.shastacounty.gov/sites/default/files/fileattachments/environmental_health/page/2898/california-well-standards-bulletin-74-90.pdf

DWR 2004 – Department of Water Resources (DWR). California's Groundwater, Bulletin 118, Solano Subbasin. Updated February 27, 2004. Available online at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Bulletin-118/Files/2003-Basin-Descriptions/5_021_66_SolanoSubbasin.pdf

DWR 2020 – Department of Water Resources (DWR). SGMA Basin Prioritization Dashboard. Last updated March 13, 2020. Available online at: https://gis.water.ca.gov/app/bp-dashboard/final/

DWR 2024 – Department of Water Resources (DWR). Water Management Planning Tool. Last updated April 11, 2024. Available online at: https://gis.water.ca.gov/app/boundaries/

DWR 2025a – Department of Water Resources (DWR). Dam Breach Inundation Map Web Publisher. Last updated January 9, 2025. Available online at: https://fmds.water.ca.gov/webgis/?appid=dam_prototype_v2

DWR 2025b – California Department of Water Resources (DWR). Sustainable Groundwater Management Act (SGMA) Data Viewer. Accessed online November 5, 2025. Available online at: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer

FEMA 2009 – Federal Emergency Management Agency (FEMA). Flood Insurance Rate Map (FIRM), Fresno County, California, and Incorporated Areas, Panel 168 of 730. Map No. 06095C0168E, revised May 9, 2009. Available online at: https://msc.fema.gov/portahttps://msc.fema.gov/portal/downloadProduct?productID=06095C0168E l/downloadProduct?productID=06095C0168E

FEMA 2025 – Federal Emergency Management Agency (FEMA). FEMA's National Flood Hazard Layer (NFHL) Viewer. Last updated April 3, 2025. Available online at: https://msc.fema.gov/nfhl

Luhdorff & Scalmanini 2021 – Luhdorff & Scalmanini Consulting Engineers (Luhdorff & Scalmanini). Solano Subbasin, Groundwater Sustainability Plan. Prepared for Solano GSA. November 2021. Available online at: https://sgma.water.ca.gov/portal/gsp/preview/117

NOAA 2024 – National Oceanic and Atmospheric Administration (NOAA). Digital Coast, Sea Level Rise Viewer. Updated on December 4, 2024. Available online at: https://coast.noaa.gov/slr/#/layer/slr/10/13581756.874679431/4498150.719796521/13/satellite/none/0.8/2050/interHigh/midAccretion

Page 1986 – Page, R.W. (Page 1986). Geology of the fresh ground-water basin of the Central Valley, California, with texture maps and sections. U.S. Geological Survey Professional Paper 1401-C. Available online at: https://pubs.usgs.gov/publication/pp1401C

Solano County 2008 – Solano County. Solano County General Plan. Adopted August 2008. Accessed March 24, 2025. Available online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp

Solano County 2020 – County of Solano Department of Resource Management Environmental Health Services Division. Solano County CUPA Operationsal Area Plan for Emergency Response to Hazardous Materials Incidents. Available online at: https://content.solanocounty.gov/sites/default/files/2025-05/Combined%20FINAL%202020%20Solano%20County%20Area%20Plan%20Text%20REFINERY%20APPENDIX.pdf

Solano County 2025a – Solano County. Solano County Parcel Viewer. Accessed October 8, 2025. Available online at: https://regis.solanocounty.com/apps

Solano County 2025b – Solano County Department of Resource Management. Midway Plaza Initial Study and Mitigated Negative Declaration. Prepared April 2025. Available online at https://www.solanocounty.gov/government/resource-management/environmental-impact-reports-negative-declarations

Stantec 2022 – Stantec. Transwestern Ventures Life Science Project Modified Initial Study. Prepared for City of Vacaville November 2022. Available online at: https://vcvll.csqrcloud.com/community-etrakit/Search/project.aspx?activityNo=22-381

Tetra Tech 2024a – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3, dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=259874&DocumentContentId=96062

Tetra Tech 2024b – Tetra Tech (TN 259895). Appendix 4.10A Hydrology and Hydraulics Analysis, dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=259895&DocumentContentI

d=96089

Tetra Tech 2025a – Tetra Tech (TN 262554). Project Description Update, dated April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=262554&DocumentContentId=99092

Tetra Tech 2025b – Tetra Tech (TN262555). Data Request Response #1j, dated April 2, 2025. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=262555&DocumentContentId=99093

Tetra Tech 2026 – Tetra Tech (TN 268258) Project Description Update #2, Part 1, dated January 16 2026. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=268258&DocumentContentId=105429

Thomasson 1960 – Thomasson, H.G., Jr., Olmsted F.H., and LeRoux E. F., 1960, Geology, water resources and usable ground-water storage capacity of part of Solano County, California: U.S. Geological Survey Water-Supply Paper 1464, 693 p. Available online at: https://pubs.usgs.gov/wsp/1464/report.pdf

USDA 2025 – United States Department of Agriculture (USDA). USDA, Natural Resource Conservation Service (NRCS) Web Soil Survey. Last updated January 10, 2025. Available online at: https://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx

USEPA 2024 – United States Environmental Protection Agency (USEPA). How's My Waterway? EPA website. Last updated on December 11, 2024. Available online at: https://mywaterway.epa.gov/state/CA/water-quality-overview

USGS 2025 – U.S. Geological Survey (USGS). Central Valley Subsidence Data Website. Last updated January 13, 2025. Available online: https://ca.water.usgs.gov/land_subsidence/central-valley-subsidence-data.html

Section 6

Environmental Justice

6 Environmental Justice

6.1 Regulatory Background

California law defines environmental justice as "the fair treatment of people of all races, cultures and income with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies" (Gov. Code, § 65040.12). In keeping with its commitment to environmental sustainability and access to all, California was one of the first states to codify the concept of environmental justice in its statutes. Beyond the fair treatment principles described in statute, CEC considers environmental justice during its staff assessment process. CEC has included environmental justice analyses in its environmental review of power plant siting cases for over two decades. CEC's goal is to ensure, through equal access to the decision-making process, everyone has equal protection from environmental and health hazards and can live, learn, play, and work in a healthy environment.

California Senate Bill 350, the Clean Energy and Pollution Reduction Act of 2015, called for the formation of a statewide Disadvantaged Communities Advisory Group (DACAG), consisting of members either from or representing disadvantaged communities, to advise the CEC and the California Public Utility Commission (CPUC) regarding the development, implementation, and impacts of proposed programs related to SB 350 and other relevant clean energy programs and policies. Its purpose is to ensure that disadvantaged communities, including Tribal and rural communities, benefit from proposed clean energy and pollution reduction programs.

Environmental Justice in the Energy Commission Siting Process

As described above, environmental justice (EJ) analysis is part of the CEC's site certification process. CEC uses U.S. Census data to identify minority and/or low-income populations (i.e., an EJ population). Additionally, CEC uses the California Environmental Protection Agency's (CalEPA) California Communities Environmental Health Screening Tool (CalEnviroScreen) to identify communities most affected by many sources of pollution, and where people are often especially vulnerable to pollution's effects (referred to as a disadvantaged community by CalEnviroScreen). The "Environmental Justice Project Screening" subsection below presents the demographic data for those people living in a 6-mile radius of the proposed project site and a determination of presence or absence of an EJ population. When an EJ population is identified, the analyses in specific technical areas[1] consider the project's impacts on this population and if those impacts would disproportionately affect the EJ population. The "Project

1 Typically, the technical areas typically analyzed as part of the CEC Environmental Justice analysis are Air Quality; Cultural and Tribal Cultural Resources; Greenhouse Gasses; Hazards, Hazardous Materials and Wildfire; Water Resources; Noise and Vibration; Transportation; and Visual Resources. Cultural and Tribal Cultural Resources considers impacts to Native American populations.

Outreach" subsection below discusses the CEC's outreach program specifically as it relates to the proposed project.

DACAG. Consistent with the CEC's Energy Equity Indicators tool, the DACAG uses the following factors to define "disadvantaged" (including community residents, workers, and businesses) in its work: (1) CalEnviroScreen disadvantaged community, as defined by CalEPA, (2) tribal lands, (3) Census tracts where area median income is less than 80 percent of state median income, and (4) households with median income less than 80 percent of Area Median Income (AMI) (CEC 2024).

JAEDI. The CEC's Justice Access Equity Diversity Inclusion (JAEDI) Initiative started in 2019 as part of CEC's commitment to embedding energy equity and environmental justice in its energy future. The JAEDI Framework is a mechanism to help establish a common understanding and approach for the CEC to address climate change and ensure all Californians have dignity, health, and prosperity (CEC 2025).

Under the JAEDI criteria, "Justice Communities" is a broad umbrella term that encompasses the following designations: (1) disadvantaged communities, pursuant to SB 535,[2] (2) low-income communities, pursuant to Assembly Bill 1550 (Gomez, Chapter 369, Statutes of 2016),[3] (3) underserved community, pursuant to Assembly Bill 841 (Ting, Chapter 362, 2020),[4] and (4) people living with disabilities as defined by the Americans with Disabilities Act (ADA).[5]

CEC staff typically conduct EJ analysis by taking the following steps:

- Identification of a population of minority persons and/or persons with low income (i.e., EJ community), living in an area potentially affected by the proposed project;
- Identification of areas potentially affected by various project-related emissions (e.g., air quality, hazardous materials, etc.) or other project-related nuisance effects (e.g., noise, traffic, etc.); and

2 The California Environmental Protection Agency, for purposes of its Cap-and-Trade Program, defines communities in terms of Census tracts and identifies four types of geographic areas as disadvantaged: (1) Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) Census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) Census tracts identified in the 2017 DAC (disadvantaged community) designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes (CalEPA 2022).
3 (1) Census tracts with median household incomes at or below 80 percent of the statewide median income or at or below the Department of Housing and Community Development designation of low-income, and (2) Households with incomes at or below 80 percent of the statewide median income or at or below the Department of Housing and Community Development designation of low-income
4 A community in which at least 75 percent of public-school students in the project area are eligible to receive free or reduced-price meals under the National School Lunch Program
5 An individual with a disability is defined by the ADA as a person who has a physical or mental impairment that substantially limits one or more major life activities, a person who has a history or record of such an impairment, or a person who is perceived by others as having such an impairment.

- A determination of the potential for a significant adverse disproportionate impact on an identified EJ population resulting from the proposed project alone, or in combination with other existing and/or planned projects in the area (i.e., from cumulative impacts).

Staff may utilize CalEnviroScreen to identify additional disadvantaged communities after screening the study area by race/ethnicity and low income. CEC staff may use CalEnviroScreen to assess project effects on communities identified as disadvantaged (i.e., low-income and/or high-minority populations, SB 535-designated disadvantaged communities) by reviewing indicators (see Table 6-1) as they relate to specific technical issues being analyzed. The project-specific Census tracts identified as disadvantaged are reviewed by CEC technical analysts (Air Quality; Cultural and Tribal Cultural Resources; Hazards and Hazardous Materials; Noise and Vibration; Public Health; Transportation; Visual Resources; and Water Resources) to determine if any disproportionate burdens would be borne by EJ populations.

CalEnviroScreen

In 2012, CalEPA developed CalEnviroScreen as a science-based mapping tool that provides an objective method for evaluating multiple pollutants and stressors in local communities, and ultimately for identifying disadvantaged communities pursuant to Health and Safety Code section 39711 as enacted by Senate Bill (SB) 535 (De León, Stats. 2012 Ch. 830). CalEPA released an updated designation for disadvantaged communities in May 2022 for the purposes of SB 535. As required by State law, disadvantaged communities are identified based on geographic, socioeconomic, public health, and environmental hazard criteria. CalEnviroScreen identifies impacted communities by taking into consideration pollution exposure and its effects, as well as health and socioeconomic status, at the Census-tract level (OEHHA 2021, pg. 8).

The CalEPA Office of Environmental Health Hazard Assessment (OEHHA) released the Draft CalEnviroScreen 5.0 update in January 2026. This update uses the most recent census geography (i.e., from the 2020 U.S. Census), incorporates the most recent data, refined methodologies, and input from community-based organizations. It also introduces two new indicators: Diabetes Prevalence and Small Air Toxic Sites. Currently, the public comment period on the 5.0 Update has ended but no updates on official finalization of the software have been provided by OEHHA. Although, this version of the tool update is not finalized, staff has utilized CalEnviroScreen 5.0 for the project to ensure use of latest demographic data. In addition, it should be noted that CalEnviroScreen 4.0 has been using 2010 U.S. Census data.

The CalEnviroScreen 5.0 model incorporates 23 indicators that measure a community's exposure, environmental effects, sensitive population, and socioeconomic factors. Indicators for exposure and environmental effects comprise a Pollution Burden group, and indicators for sensitive populations and socioeconomic factors comprise a Population Characteristics group.

Table 6-1 lists the indicators that go into the Pollution Burden score and the Population Characteristics score to form the final CalEnviroScreen score. These indicators are used to measure factors that affect the potential for pollution impacts in communities.

TABLE 6-1 COMPONENTS THAT FORM THE CALENVIROSCREEN 5.0 SCORE

Pollution Burden	
Exposure Indicators	**Environmental Effects Indicators**
Children's lead risk from housing	Cleanup sites
Diesel particulate matter (PM) emissions	Groundwater threats
Drinking water contaminants	Hazardous waste
Ozone concentrations	Impaired water bodies
PM 2.5 concentrations	Small toxic air sites
Pesticide use	Solid waste sites and facilities
Toxic releases from facilities	
Traffic density	
Population Characteristics	
Sensitive Populations Indicators	**Socioeconomic Factors Indicators**
Asthma emergency department visits	Educational attainment
Cardiovascular disease (emergency department visits for heart attacks)	Housing burdened low-income households
Diabetes prevalence	Linguistic isolation
Low birth-weight infants	Poverty
	Unemployment

Notes: PM= particulate matter. PM 2.5= fine particulate matter 2.5 microns or less.
Source: OEHHA 2026

The CalEnviroScreen model uses U.S. Census tract data as a geographic scale for identifying disadvantaged communities within California. For each Census tract, CalEnviroScreen calculates an overall score by combining the individual indicator scores within each of the two groups (i.e., Pollution Burden and Population Characteristics), then multiplying the Pollution Burden and Population Characteristics scores to produce a final score:

[Pollution Burden] x [Population Characteristics] = CalEnviroScreen Score

- Pollution Burden Score. Pollution Burden scores for each U.S. Census tract are derived from the average percentiles of the eight exposures indicators (ozone and PM2.5 concentrations, diesel PM emissions, drinking water contaminants, children's lead risk from housing, pesticide use, toxic releases from facilities, and traffic impacts) and the five environmental effects indicators (cleanup sites, impaired water bodies, groundwater threats, hazardous waste facilities and generators, and solid waste sites and facilities). Indicators from the environmental effects component are given half the weight of the indicators from the exposures component. The calculated average Pollution Burden score (average of the indicators) is divided by 10 and rounded to one decimal place for a Pollution Burden score ranging from 0.1 to 10.
- Population Characteristics Score. Population Characteristics scores for each U.S. Census tract are derived from the average percentiles for the three sensitive

populations indicators (cardiovascular disease, low birth weight infants, and asthma) and the five socioeconomic factors indicators (educational attainment, linguistic isolation, housing burden, unemployment, and poverty). The calculated average percentile is divided by 10 for a Population Characteristic score ranging from 0.1 to 10.

Since each of the two groups (i.e., Pollution Burden and Populations Characteristics) has a maximum score of 10, the maximum CalEnviroScreen Score is 100. Based on these scores, Census tracts across California are ranked relative to one another. The indicator values for the Census tracts for the entire state are ordered from highest to lowest. A percentile is calculated from the ordered values for all areas that have a score. A higher percentile indicates a higher potential relative burden. A percentile does not describe the magnitude of the difference between two tracts, but rather it simply tells the percentage of tracts with lower values for that indicator (OEHHA 2021, pg. 20). Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0 are considered disadvantaged for the purposes of SB 535 (CalEPA 2022).

The tool uses U.S. Census tracts as the geographic unit of analysis. The current draft version was released in 2026 (5.0) and uses 2020 Census boundaries.

For the technical areas of Air Quality and Hydrology and Water Quality, CEC staff reviews the CalEnviroScreen data for the project area as follows:

- For Air Quality, these indicators are asthma, cardiovascular disease, diesel particulate matter (PM) emissions, low birth-weight infants, ozone concentrations, pesticide use, PM with diameters of 2.5 micrometers or smaller (PM2.5) concentrations, toxic releases from facilities, and traffic impacts.
- For Hydrology and Water Quality, these indicators are drinking water contaminants, groundwater threats, and impaired water bodies.

When these technical areas have identified a potential project impact where an EJ population is present, CalEnviroScreen is used to better understand the baseline characteristics of the areas where the impact would occur and ensure that disadvantaged communities in the vicinity of the proposed project have not been missed when screened by race/ethnicity and low income alone.

Project Outreach

In 2016, SB 1000 (Leyva, Chapter 587, Statutes of 2016) was enacted to require local governments with disadvantaged communities, as defined in statute, to incorporate environmental justice into their general plans when two or more general plan elements (sections) are updated. The Governor's Office of Land Use and Climate Innovation (the state's comprehensive planning agency) worked with State agencies, local governments, and many partners to update the General Plan Guidelines in 2020 to include guidance for communities on environmental justice (LCI 2020). This law has several purposes, including to facilitate transparency and public engagement in local

governments' planning and decision-making processes, reduce harmful pollutants and the associated health risks in EJ populations, and promote equitable access to health-inducing benefits, such as healthy food options, housing, public facilities, and recreation.

Meaningful involvement is an important part of the siting process and occurs when:

- Those whose environment or health would be potentially affected by the decision on the proposed activity have an appropriate opportunity to participate in the decision;
- The population's contribution can influence the decision; and
- The concerns of all participants involved are considered in the decision-making process.

CEC staff and the Office of the Public Advisor, Energy Equity, and Tribal Affairs (PAO+) coordinated closely on public outreach early in the review process. The PAO+ outreach contact consisted of emails to schools and school districts, colleges, foundations, , a business association, an event venue, environmental organizations, community centers, daycare centers, senior service organizations and care centers, community service organizations, religious organizations, animal organizations and facilities, equestrian facilities, farms and ranches, a vineyard, youth organizations, and veteran organizations within a 12-mile radius of the proposed project.

On October 20, 2025, CEC staff mailed a Notice of Preparation of a Draft Environmental Impact Report to the trustee agency, Solano County Clerk, and local, regional, and federal agencies. The NOP was posted to the project docket (TN 266663), and was submitted to the Office of Land Use and Climate Innovation (formerly Office of Planning and Research) (State Clearinghouse). Based on current U.S. Census English fluency data for the population residing in the cities and communities within 1,000 feet of the project site, translation of the public notices was deemed unnecessary.

In accordance with the Governor's Executive Order B-10-11, the CEC's Tribal Consultation Policy, the CEC's Siting Regulations, and amendments to CEQA (i.e., Assembly Bill 52), staff conducted outreach and consultation with regional tribal governments. Additional information regarding the outreach efforts and specific groups contacted can be found in **Section 5.4, Cultural and Tribal Cultural Resources**.

As described in **Section 3, Introduction**, staff exceeded the noticing requirements under CEQA Guidelines Section 15087 by mailing the Notice of Availability of the Draft EIR to all owners and occupants not just contiguous to the project site but also to property owners within 1,000 feet of project site and 500 feet of project linears.

6.2 Environmental Setting

Environmental Justice Project Screening. For environmental justice concerns, the CEC staff has historically used a 6-mile radius surrounding the project site based on the

potential distance that air pollution emissions from a natural gas powerplant can travel. While the proposed project does not include a thermal powerplant, CEC staff retained the 6-mile distance due to the rural nature of the area.[6]

Tables 6-2 and **6-3** present income and race data for all of the block groups within the 6-mile radius surrounding the project site. The socioeconomic data source is U.S. Census Bureau's American Community Survey (ACS) 2019-2023 5-Year Estimates (ACS 2024). Because ACS estimates come from a sample population, a certain level of variability is associated with the estimates. Supporting documentation on ACS data accuracy and statistical testing can be found on the ACS website in the Data and Documentation section available here: https://www.census.gov/programs-surveys/acs.html. For purposes of this analysis, U.S. Census ACS data was utilized to provide current data, consistency between the data used to identify minority and low-income populations, and consistency between the different geographies presented. The 2019-2024 ACS data uses the 2020 U.S. For these reasons, U.S. Census ACS data is considered best available for representing the demographic makeup of affected communities in the project area. Use of published U.S. Census ACS data estimates is commonly used by CEQA Lead Agencies.

In this analysis, "minorities" are defined as individuals who are members of the following population groups: American Indian or Alaskan Native, Asian or Pacific Islander, Black not of Hispanic origin, or Hispanic. The minority population has been calculated (Table 6-3) by subtracting the "white alone, not Hispanic or Latino," (as defined by the U.S. Census) population from the total population. Within this analysis, an EJ population of concern is identified when the minority population of the potentially affected area (i.e., Census tract) is greater than 50 percent. Historically, guidance from EPA suggests using regional low-income definitions as appropriate (U.S. EPA 2015). Due to the higher cost of living in California as compared to the nation as a whole, a higher threshold is appropriate for the identification of low-income populations.

Consistent with CalEnviroScreen, for the purpose of this analysis, low-income people are defined as those with an income of less than 2.0 times the federal poverty threshold (EPA 2015, 2024; OEHHA 2021). Within this analysis, an EJ population of concern is identified when the percentage of low-income population of the potentially affected area (i.e., block group or Census tract) is equal to or greater than the low-income population of the greater geography (i.e., the County). To determine EJ populations of concern by the low-income criteria for this analysis, the greater comparative geography used is Solano County, which has a population of 21.98 percent low-income (rounded to 22 percent). A low-income EJ population of concern includes any block group above this threshold.

6 Per California Energy Commission siting regulation Appendix B (g)(9)(C), a search of available health studies concerning the potentially affected populations within a 6-mile radius is required.

As shown in **Table 6-2**, 17 block groups contain a low-income population greater than the larger comparative geography of Solano County and are considered EJ populations based on the low-income criteria. These block groups (highlighted in the gray rows in **Table 6-2** below) correspond to the labeled block groups shown in **Figure 6-1**. **Table 6-3** shows that 29 block groups contain a minority population greater than 50 percent. These block groups with a minority population greater than 50 percent (highlighted in the gray rows in **Table 6-3** below) correspond to the labeled block groups in **Figure 6-2**. Additionally, 10 block groups have greater percentages of minority populations than overall Solano County.

TABLE 6-2 INCOME STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population (whose poverty status is known)	People with Ratio of Income to Poverty 2.0 and under	Percent Low-Income
California	38,529,452	27,927,272	27.52%
Solano County	441,245	344,246	21.98%
Block Group 1; Census Tract 2529.03	1,137	1,058	6.95%
Block Group 1; Census Tract 2529.04	1,292	1,087	15.87%
Block Group 1; Census Tract 2529.08	1,219	1,056	13.37%
Block Group 1; Census Tract 2529.09	2,469	1,996	19.16%
Block Group 1; Census Tract 2529.10	1,025	778	24.10%
Block Group 1; Census Tract 2529.11	2,529	2,256	10.79%
Block Group 1; Census Tract 2529.12	1,831	1,795	1.97%
Block Group 1; Census Tract 2529.14	2,724	2,563	5.91%
Block Group 1; Census Tract 2531.01	773	632	18.24%
Block Group 1; Census Tract 2531.05	1,367	997	27.07%

TABLE 6-2 INCOME STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population (whose poverty status is known)	People with Ratio of Income to Poverty 2.0 and under	Percent Low-Income
Block Group 1; Census Tract 2531.06	663	599	9.65%
Block Group 1; Census Tract 2531.07	604	535	11.42%
Block Group 1; Census Tract 2532.05	1,446	1,271	12.10%
Block Group 1; Census Tract 2532.06	2,192	2,029	7.44%
Block Group 1; Census Tract 2532.07	2,663	2,382	10.55%
Block Group 1; Census Tract 2532.08	739	722	2.30%
Block Group 1; Census Tract 2533	1,420	1,098	22.68%
Block Group 2; Census Tract 2529.03	1,335	1,110	16.85%
Block Group 2; Census Tract 2529.04	1,507	1,409	6.50%
Block Group 2; Census Tract 2529.08	1,350	1,211	10.30%
Block Group 2; Census Tract 2529.09	2,965	2,792	5.83%
Block Group 2; Census Tract 2529.10	1,100	873	20.64%
Block Group 2; Census Tract 2529.11	859	612	28.75%
Block Group 2; Census Tract 2529.12	727	703	3.30%
Block Group 2; Census Tract 2529.14	1,525	764	49.90%

TABLE 6-2 INCOME STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population (whose poverty status is known)	People with Ratio of Income to Poverty 2.0 and under	Percent Low-Income
Block Group 2; Census Tract 2529.15	4,370	4,242	2.93%
Block Group 2; Census Tract 2531.05	891	695	22.00%
Block Group 2; Census Tract 2531.06	1,113	798	28.30%
Block Group 2; Census Tract 2531.07	1,990	1,376	30.85%
Block Group 2; Census Tract 2532.05	717	656	8.51%
Block Group 2; Census Tract 2532.06	1,843	1,742	5.48%
Block Group 2; Census Tract 2532.08	949	883	6.95%
Block Group 2; Census Tract 2533	1,302	805	38.17%
Block Group 2; Census Tract 2534.03	1,003	786	21.64%
Block Group 3; Census Tract 2529.03	1,506	1,420	5.71%
Block Group 3; Census Tract 2529.04	1,258	1,170	7.00%
Block Group 3; Census Tract 2529.08	1,194	1,179	1.26%
Block Group 3; Census Tract 2529.10	1,727	1,622	6.08%
Block Group 3; Census Tract 2529.11	524	440	16.03%
Block Group 3; Census Tract 2529.12	844	609	27.84%

TABLE 6-2 INCOME STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population (whose poverty status is known)	People with Ratio of Income to Poverty 2.0 and under	Percent Low-Income
Block Group 3; Census Tract 2529.14	1,671	1,129	32.44%
Block Group 3; Census Tract 2531.05	1,292	1,139	11.84%
Block Group 3; Census Tract 2531.06	1,817	1,577	13.21%
Block Group 3; Census Tract 2532.03	829	544	34.38%
Block Group 3; Census Tract 2532.05	877	468	46.64%
Block Group 3; Census Tract 2532.08	1,703	598	64.89%
Block Group 3; Census Tract 2534.03	2,865	2,497	12.84%
Block Group 4; Census Tract 2529.04	4,338	3,861	11.00%
Block Group 4; Census Tract 2529.10	1,328	1,257	5.35%
Block Group 4; Census Tract 2529.11	1,273	1,158	9.03%
Block Group 4; Census Tract 2529.12	771	638	17.25%
Block Group 4; Census Tract 2531.05	1,575	1,045	33.65%
Block Group 4; Census Tract 2532.08	1,433	807	43.68%
Block Group 4; Census Tract 2534.02	3,752	3,077	17.99%
Block Group 5; Census Tract 2529.12	1,323	1,273	3.78%

TABLE 6-2 INCOME STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population (whose poverty status is known)	People with Ratio of Income to Poverty 2.0 and under	Percent Low-Income
Block Group 5; Census Tract 2531.05	1,433	1,018	28.96%

Notes: Low-income population is defined when the percent of a population (i.e., in a county or Census tract) in households is less than or equal to twice the poverty level. The ACS low-income information is from Table C17002, "Ratio of Income to Poverty Level in the Past 12 Months." Highlighted rows show population where low-income population percentage is greater than the larger comparative geography (Solano County).
Source: ACS 2024

TABLE 6-3 RACE STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population	People of Color	Percent People of Color
California	39,242,785	25,669,559	65.41%
Solano County	450,824	296,076	65.67%
Block Group 1; Census Tract 2529.03	1,137	311	27.35%
Block Group 1; Census Tract 2529.04	1,292	395	30.57%
Block Group 1; Census Tract 2529.08	1,219	560	45.94%
Block Group 1; Census Tract 2529.09	2,469	1,341	54.31%
Block Group 1; Census Tract 2529.10	1,029	465	45.19%
Block Group 1; Census Tract 2529.11	2,568	1,336	52.02%
Block Group 1; Census Tract 2529.12	1,831	1,243	67.89%
Block Group 1; Census Tract 2529.14	2,724	1,243	45.63%
Block Group 1; Census Tract 2531.01	778	516	66.32%

TABLE 6-3 RACE STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population	People of Color	Percent People of Color
Block Group 1; Census Tract 2531.05	1,367	1,070	78.27%
Block Group 1; Census Tract 2531.06	663	210	31.67%
Block Group 1; Census Tract 2531.07	604	339	56.13%
Block Group 1; Census Tract 2532.05	1,446	665	45.99%
Block Group 1; Census Tract 2532.06	2,192	1,257	57.34%
Block Group 1; Census Tract 2532.07	2,663	1,186	44.54%
Block Group 1; Census Tract 2532.08	739	322	43.57%
Block Group 1; Census Tract 2533	1,420	337	23.73%
Block Group 2; Census Tract 2529.03	1,335	465	34.83%
Block Group 2; Census Tract 2529.04	1,507	533	35.37%
Block Group 2; Census Tract 2529.08	1,400	909	64.93%
Block Group 2; Census Tract 2529.09	2,968	1,462	49.26%
Block Group 2; Census Tract 2529.10	1,120	511	45.63%
Block Group 2; Census Tract 2529.11	859	232	27.01%
Block Group 2; Census Tract 2529.12	727	271	37.28%

TABLE 6-3 RACE STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population	People of Color	Percent People of Color
Block Group 2; Census Tract 2529.14	1,525	1,167	76.52%
Block Group 2; Census Tract 2529.15	4,386	2,644	60.28%
Block Group 2; Census Tract 2531.05	891	538	60.38%
Block Group 2; Census Tract 2531.06	1,113	455	40.88%
Block Group 2; Census Tract 2531.07	1,990	1,566	78.69%
Block Group 2; Census Tract 2532.05	717	309	43.10%
Block Group 2; Census Tract 2532.06	1,847	762	41.26%
Block Group 2; Census Tract 2532.08	949	222	23.39%
Block Group 2; Census Tract 2533	1,302	734	56.37%
Block Group 2; Census Tract 2534.03	1,026	484	47.17%
Block Group 3; Census Tract 2529.03	1,506	649	43.09%
Block Group 3; Census Tract 2529.04	1,260	699	55.48%
Block Group 3; Census Tract 2529.08	1,194	597	50.00%
Block Group 3; Census Tract 2529.10	1,727	894	51.77%
Block Group 3; Census Tract 2529.11	593	257	43.34%

TABLE 6-3 RACE STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population	People of Color	Percent People of Color
Block Group 3; Census Tract 2529.12	844	433	51.30%
Block Group 3; Census Tract 2529.14	1,671	1,254	75.04%
Block Group 3; Census Tract 2531.05	1,292	775	59.98%
Block Group 3; Census Tract 2531.06	1,827	1,063	58.18%
Block Group 3; Census Tract 2532.03	895	507	56.65%
Block Group 3; Census Tract 2532.05	900	690	76.67%
Block Group 3; Census Tract 2532.08	1,703	1,424	83.62%
Block Group 3; Census Tract 2534.03	2,865	1,600	55.85%
Block Group 4; Census Tract 2529.04	4,374	2,429	55.53%
Block Group 4; Census Tract 2529.10	1,328	997	75.08%
Block Group 4; Census Tract 2529.11	1,273	331	26.00%
Block Group 4; Census Tract 2529.12	771	323	41.89%
Block Group 4; Census Tract 2531.05	1,575	650	41.27%
Block Group 4; Census Tract 2532.08	1,433	1,416	98.81%
Block Group 4; Census Tract 2534.02	3,766	2,349	62.37%

TABLE 6-3 RACE STATISTICS FOR CALIFORNIA, SOLANO COUNTY, AND PROJECT 6-MILE RADIUS

Geography	Total Population	People of Color	Percent People of Color
Block Group 5; Census Tract 2529.12	1,323	274	20.71%
Block Group 5; Census Tract 2531.05	1,433	775	54.08%

Notes: To calculate percent people of color, the following equation was used: (Total Population: All races/ethnicities – Total Population: Non-Hispanic, White Alone) / (Total Population: All races/ethnicities) from Table B03002, "Hispanic or Latino Origin by Race." Highlighted rows show population where minority population percentage is greater than fifty percent.
Source: ACS 2024

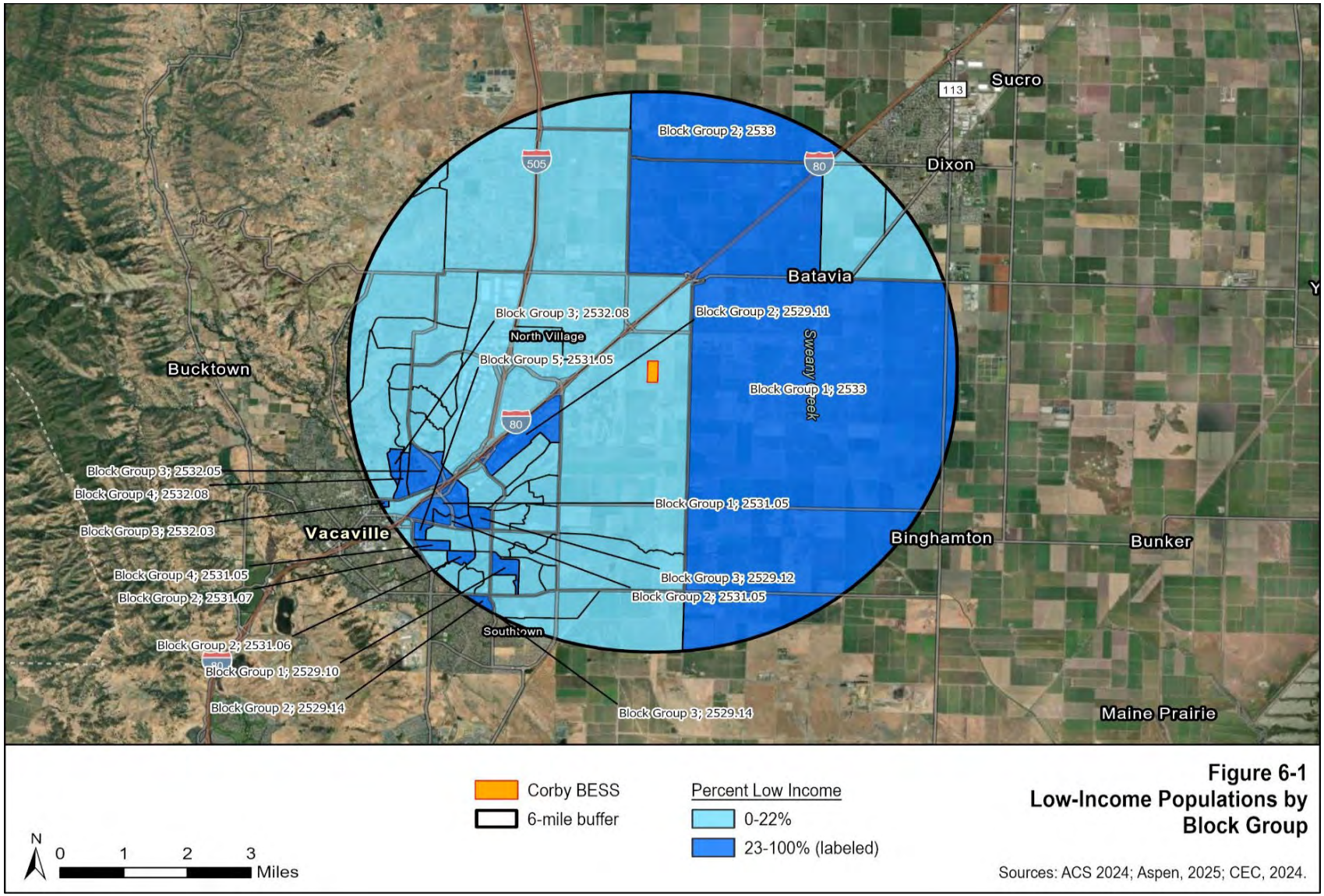


Figure 6-1
Low-Income Populations by Block Group

Sources: ACS 2024; Aspen, 2025; CEC, 2024.

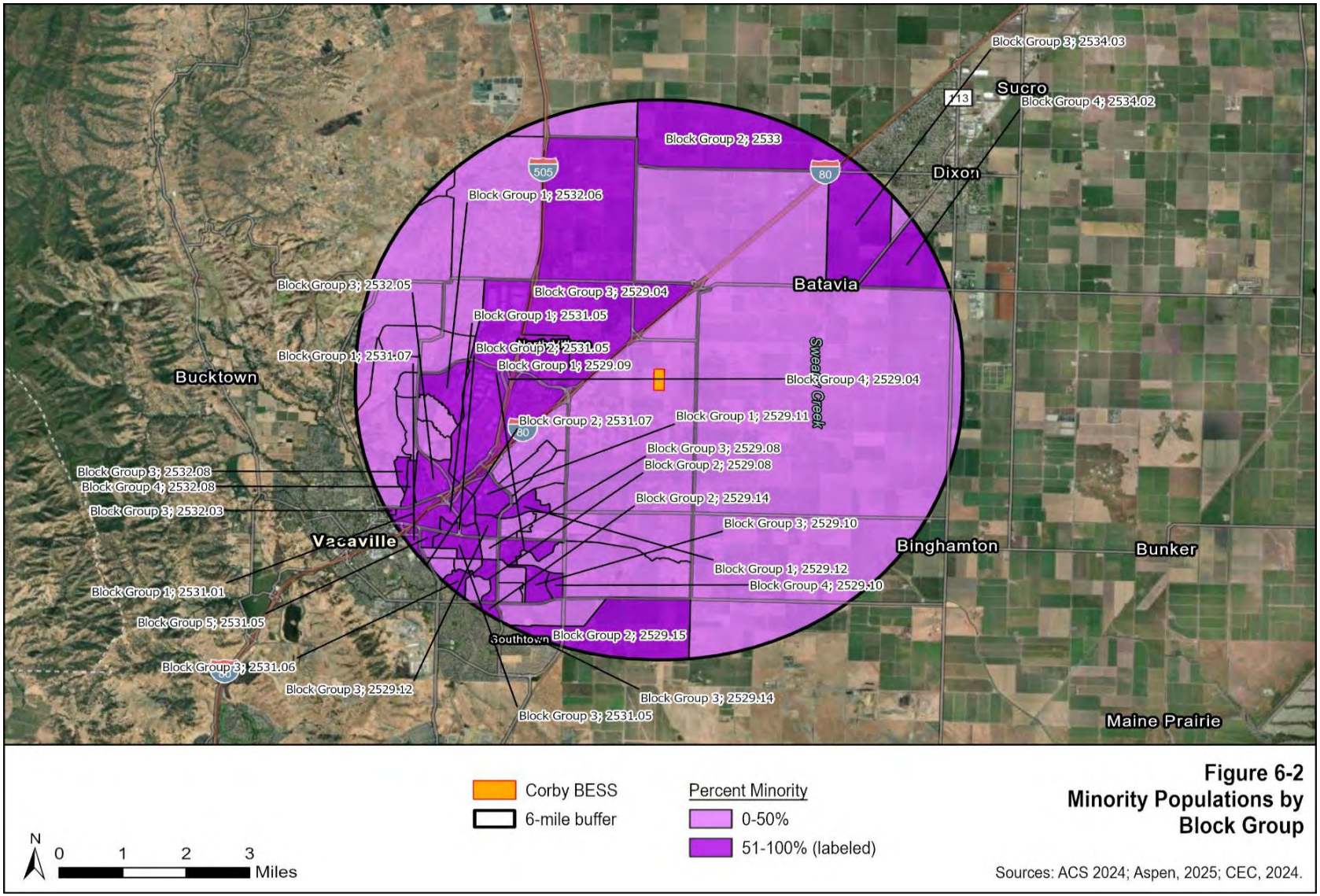


Figure 6-2
Minority Populations by Block Group

Sources: ACS 2024; Aspen, 2025; CEC, 2024.

CalEnviroScreen Results. Draft CalEnviroScreen 5.0[7] was used to gather additional information about the population potentially impacted by the proposed project. The CalEnviroScreen indicators (see **Table 6-1**) are used to measure factors that affect the potential[8] for pollution impacts in disadvantaged communities, as defined by CalEnviroScreen. CEC staff used CalEnviroScreen to identify if additional disadvantaged communities[9] were in the vicinity of the proposed project and better understand the characteristics of the areas where impacts would occur.

Table 6-4 presents the CalEnviroScreen overall scores for the CalEnviroScreen communities within a 6-mile radius of the project site. It must be noted that CalEnviroScreen evaluates geographies at the tract level, which is different from the block-group geography used in **Tables 6-2** and **6-3**. There are no Census tracts within 6 miles of the project site that are considered disadvantaged under the CalEPA definition because all Census tracts within the 6-mile boundary are below the threshold of receiving the highest 25 percent of overall scores in CalEnviroScreen 5.0. Therefore, detailed CalEnviroScreen indicator data for these tracts is not provided.

TABLE 6-4 CALENVIROSCREEN SCORES FOR COMMUNITIES WITHIN THE PROJECT'S SIX-MILE RADIUS

Census Tract No.	Total Population	CalEnviroScreen 5.0 Percentile	Pollution Burden Percentile	Population Characteristics Percentile	Disadvantaged Community Category
6095252903	4,668	36.58	34.35	36.78	None
6095252904	8,433	51.83	58.60	43.23	None
6095252908	3,813	6.72	3.06	21.31	None
6095252909	5,437	13.64	11.45	22.92	None
6095252910	5,204	15.63	2.04	48.75	None
6095252911	5,293	33.08	10.33	56.06	None
6095252912	5,496	6.80	4.50	17.88	None
6095252914	5,920	22.67	9.99	39.04	None

7 Version 5.0 of the CalEnviroScreen tool is still in draft form; however, the data used in the tool is current published data. To be conservative, staff also screened Census tracts using data from CalEnviroScreen 4.0. CalEnviroScreen 4.0 results also showed that no Census tracts within 6 miles of the project site were considered disadvantaged under the CalEPA definition.

8 It is important to note that CalEnviroScreen is not an expression of health risk and does not provide quantitative information on increases of impacts for specific sites or projects. CalEnviroScreen uses the criteria of "proximity" to a hazardous waste site, a leaking underground tank, contaminated soil, an emission stack (industry, power plant, etc.) to determine that a population is "impacted." It does not address general principles of toxicology: dose/response and exposure pathways. For certain toxic chemicals to pose a risk to the public, offsite migration pathways must exist (through ingestion, inhalation, dermal contact, etc.) and contact to a certain amount – not just any amount – must exist.

9 The CalEPA, for purposes of its Cap-and-Trade Program, defines communities in terms of Census tracts and identifies four types of geographic areas as disadvantaged: (1) Census tracts receiving the highest 25 percent of overall scores in CalEnviroScreen 4.0; (2) Census tracts lacking overall scores in CalEnviroScreen 4.0 due to data gaps, but receiving the highest 5 percent of CalEnviroScreen 4.0 cumulative pollution burden scores; (3) Census tracts identified in the 2017 DAC designation as disadvantaged, regardless of their scores in CalEnviroScreen 4.0; (4) and areas under the control of federally recognized Tribes (CalEPA 2022).

TABLE 6-4 CALENVIROSCREEN SCORES FOR COMMUNITIES WITHIN THE PROJECT'S SIX-MILE RADIUS

Census Tract No.	Total Population	CalEnviroScreen 5.0 Percentile	Pollution Burden Percentile	Population Characteristics Percentile	Disadvantaged Community Category
6095252915	6,583	17.93	16.47	24.26	None
6095253101	4,789	29.45	40.92	24.59	None
6095253105	6,558	41.72	17.44	58.78	None
6095253106	3,603	22.51	2.73	58.73	None
6095253107	5,697	48.28	24.24	60.69	None
6095253203	3,855	25.61	16.41	36.22	None
6095253205	3,063	31.33	23.27	37.67	None
6095253206	4,039	6.41	2.37	22.59	None
6095253207	2,663	10.61	5.86	24.38	None
6095253208	4,824	43.44	14.65	65.64	None
6095253300	2,722	69.59	91.19	46.57	None
6095253402	9,208	65.71	71.22	54.80	None
6095253403	5,471	55.32	60.21	47.78	None

Note: There are no CalEnviroScreen disadvantaged communities by Census tract in the project's 6-mile radius.
Source: CalEnviroScreen 5.0 (draft)

Summary of Environmental Justice Populations

As discussed above in Section 6.2, *Environmental Justice Project Screening*, of the 56 block groups within the 6-mile buffer of the project, 34 block groups are identified as EJ populations by at least one of the EJ population criteria. This includes 17 block groups with low-income populations (**Table 6-2** and **Figure 6-1**) and 29 block groups with minority populations (**Table 6-3** and **Figure 6-2**). Twelve of these populations identified as both minority and low-income.

Using CalEnviroScreen, no additional Census tracts within 6 miles of the project site were identified as disadvantaged under the CalEPA definition.

6.3 Environmental Impacts

Section 6.2 provides a block group level screening to identify low-income and minority EJ populations of concern, as well as tract-level screening through CalEnviroScreen. Upon identification of EJ populations, the environmental justice analysis evaluates if those tracts would receive disproportionate impacts. The analysis will consider all unavoidable significant impacts of nuisance effects for any disproportionate project burdens to EJ populations identified in Section 6.2. In cases where adversely affected populations could be estimated, the composition of the significantly affected population was compared to data for the "general population," which is a term historically used by the federal Council on Environmental Quality (CEQ 1997). For this analysis, Solano County is used as a comparison population to determine whether effects are disproportionate. For impacts found to be less than significant, less than cumulatively considerable, or classified as "No Impact" (and therefore also not cumulatively

considerable), further evaluation of the potential for disproportionately high and adverse effects on minority and/or low-income populations would not be needed because impacts that would not be significant would not have the potential to result in negative disproportionate effects.

The following technical areas (i.e., the nuisance effects) discuss impacts to EJ populations: Air Quality; Cultural and Tribal Cultural Resources; Hazards and Hazardous Materials; Noise and Vibration; Public Health; Transportation; Visual Resources; and Water Resources.

Air Quality

The project is located within the boundaries of the Yolo-Solano Air Quality Management District (YSAQMD). As described in **Section 5.1, Air Quality**, the area of the Sacramento Valley Air Basin (SVAB) in which the project is located, is classified as nonattainment for the one-hour state ozone standard as well as for the federal and state eight-hour ozone standards. The SVAB is also designated as nonattainment for the federal 24-hour PM2.5 standard. Additionally, the SVAB is classified as nonattainment for the state 24-hour and annual arithmetic mean PM10 standards. The SVAB is unclassified or classified as attainment for all other pollutant standards.

CEC staff evaluated potential air quality impacts that could affect the identified EJ populations. As shown in **Table 6-4**, there are no Census tracts within 6 miles of the project site considered disadvantaged under the CalEPA definition, so detailed CalEnviroScreen indicator data is not applicable. Instead, the analysis focuses on the EJ populations identified at the block-group level in **Tables 6-2** and **6-3**. The local cumulative concentrations of air pollutants are dominated by the combined effects of existing background concentrations. CEC staff concluded that the project's criteria pollutant emissions would not occur at rates that could be cumulatively significant after mitigation (**Section 5.1, Air Quality**). The project would contribute to temporary construction impacts, but it would not contribute considerably to the cumulative concentrations; therefore, no disproportionate impacts to the identified EJ populations would occur.

Ozone Concentrations

The exposure indicator in CalEnviroScreen for ozone concentrations represents the potential adverse health effects, including respiratory irritation and exacerbation of lung disease, resulting from ground-level ozone. This indicator is defined by the mean of summer months (May-October) of the daily maximum 8-hour ozone concentration. As previously noted, because there are no disadvantaged Census tracts within the project area under the CalEPA definition, detailed CalEnviroScreen indicator percentiles for ozone are not applicable. Regardless of the baseline concentrations, as described in **Section 5.1, Air Quality**, project construction and operation would not produce NOx or VOCs, which are precursors of ozone, at rates above regulatory thresholds. CEC staff concluded that the project would not contribute significantly to regional ozone

concentrations relative to baseline conditions. Therefore, no disproportionate impacts to the identified EJ populations would occur.

Particulate Matter (PM2.5 and PM10) Concentrations

Particulate matter (PM) is a complex mixture of aerosolized solid and liquid particles including such substances as organic chemicals, dust, allergens, and metals. These particles can come from many sources, including cars and trucks, industrial processes, wood burning, or other activities involving combustion. The composition of PM depends on the local and regional sources, time of year, location, and weather. With the implementation of Air Quality COCs and mitigation measures, PM2.5 and PM10 concentrations during construction and operation would not exceed federal or state thresholds. No disproportionate impacts to an EJ population would occur.

Cultural and Tribal Cultural Resources

As discussed in **Section 5.4, Cultural and Tribal Cultural Resources**, the project has the potential to cause significant impacts on buried or inadvertently discovered cultural or tribal cultural resources. The archaeological project area of analysis has a low to moderate probability of containing buried archaeological resources, which could meet CEQA's criteria for historical resources. If such resources were damaged during construction, it would be considered significant because of the cultural loss to affiliated California Native American tribes or other local communities and the cultural and scientific data loss to all. Ground disturbance associated with project construction could result in the inadvertent discovery of human remains and associated funerary items that meet CEQA's criteria for historical, unique archaeological, or tribal cultural resources. Damage to human remains would be a significant impact under CEQA. Therefore, COCs and MMs have been included to minimize impacts from inadvertent discoveries. Hence, with mitigation incorporated, inadvertently discovered cultural or tribal cultural resources would be considered less than significant. No disproportionate impacts to an EJ population would occur.

Hazards, Hazardous Materials, and Wildfire

Hazards and Hazardous Materials. Individuals may experience disproportionate impacts associated with hazards, hazardous materials, and wildfire impacts if the storage and use of hazardous materials within or near EJ populations occurs to a greater extent than within the community at large or if the project would contribute to or exacerbate the effects of cleanup sites, hazardous waste generators and facilities, and solid waste facilities.

As described in **Section 5.7, Hazards, Hazardous Materials/Waste, and Wildfire**, hazardous material brought onto the project site during construction and operation would be stored consistent with the applicable plans, policies, and regulations. Therefore, the likelihood of a spill or release of sufficient quantity to impact the surrounding community would be very unlikely. Neither construction nor operation of the project is expected to generate significant hazardous waste other

than those generated during equipment maintenance. The handling and disposal of each type of hazardous material depends on the hazardous properties of its constituent materials. Existing plans, policies, and regulations ensure the desired handling and disposal of hazardous material and hazardous waste to prevent potential public or environmental health impacts. No disproportionate impacts to EJ population would occur.

Operation of the battery energy storage system (BESS) would include the use of lithium-ion batteries, which could increase the risk of a fire that could emit toxic gases. Staff determined that the potential effects of hazardous materials accidents would be less than significant with mitigation incorporated. The nearest EJ population is approximately 0.5 miles from the project site; therefore, no disproportionate impacts to an EJ population would occur.

Wildfire. As shown in **Figure 5.7-1, Fire Hazard Severity Zone Map**, the project site is not within an SRA and is therefore located in an LRA. The project site is located within an unzoned LRA with very low Wildfire Hazard Potential (CAL FIRE 2025b). **Figure 5.7-2, Historic Wildfires Map** shows that there have been no major fires in the immediate and surrounding areas of the project since 1981. The project site is in a flat agricultural region. Because the potential for wildfire is low, and EJ communities are at least 0.5 miles from the project site, project activities would not result in disproportionate impacts to an EJ population.

Noise and Vibration

EJ communities may experience disproportionate noise and vibration impacts if the siting of unmitigated industrial facilities occur within or near EJ communities to a greater extent than with Solano County at large. There are no EJ communities in close vicinity to the project site. The nearest EJ communities are approximately 0.5 mile away (see **Figures 6-1** and **6-2**). Noise and vibration generated from construction and operation of the project site would not result in any substantial increases of ambient noise levels at distant EJ communities.

In addition, CEC staff have identified several COCs that would reduce potential noise impacts from construction and operation of the project to below the applicable noise thresholds. No disproportionate impacts to an EJ population would occur.

Public Health

Section 5.10, Public Health, identified that the potential risks to public health during construction would be associated with exposure to diesel particulate matter (DPM) emissions from diesel-fueled engines. DPM is expected to be the predominant toxic air contaminant (TAC) emitted during construction and is the main contaminant of concern for this project.

Diesel PM Emissions. Diesel PM emissions are associated with adverse health effects, such as irritation to the eyes, throat, nose, cardiovascular and pulmonary disease, and lung cancer.

CEC staff conducted a public health assessment by evaluating the information and data provided by the applicant (see **Section 5.10, Public Health**). Staff relied upon the expertise and guidelines of the OEHHA to identify contaminants that cause cancer or other non-cancer health effects and to identify the toxicity, cancer potency factors, and non-cancer Reference Exposure Levels (RELs). The health effects of exposure to toxic emissions are based on impacts to the maximum exposed individual.

CEC staff evaluated health risks primarily in relation to DPM, because it identified DPM as the TAC expected to be emitted in the largest quantity during project construction. Since OEHHA has not developed an acute REL for DPM, acute non-cancer health effects could not be evaluated.

The results of the health risk assessment indicated that, with implementation of COC **AQ-SC5** in **Section 5.1, Air Quality**, cancer risk and chronic noncancer risk hazard index would be well below YSAQMD thresholds for construction. Project operation would not expose sensitive receptors to substantial pollutant concentrations of DPM (see **Section 5.10, Public Health**). The health risks would be less than significant with mitigation incorporated. No disproportionate impacts to an EJ population would occur.

Pesticide Use. In CalEnviroScreen, pesticide use indicator represents certain high-hazard, high-volatility substances that may lead to unintended environmental damage. The proposed project would not use pesticides in areas that are available to the public, and the risk to the public would be less than significant. No disproportionate impacts to an EJ population would occur.

Toxic Releases from Facilities. In CalEnviroScreen, chemical releases are defined by the toxicity-weighted concentrations of modeled chemical releases to air from facility emissions and off-site incineration. According to the results of the health risk assessment conducted for the project in **Section 5.10, Public Health**, impacts associated with toxic releases from construction and operation activities (diesel-fueled equipment) would be less than significant with mitigation incorporated. The project would not have a significant cumulative contribution to toxic releases and there would not be any disproportionate impacts on an EJ population.

The BESS would include the use of lithium-ion batteries that could emit toxic gases in the event of a fire during operations or after disposal. CEC staff concluded that, with implementation of COCs, the project would result in a less than significant risk to the public during any potential BESS thermal runaway or fire event and through the disposal of hazardous materials or waste, including batteries. All battery disposals would be conducted in accordance with applicable LORS, COCs and the development of a

Worker Safety Program to reduce the risks associated with on-site fire and the disposal of hazardous materials. The potential risk associated with project-related toxic emissions would be less than significant with mitigation. No disproportionate impacts to an EJ population would occur.

Traffic Impacts. In CalEnviroScreen, the exposure to traffic impacts is based on the number of vehicles in a specified area, that result in human exposure to chemicals that are released into the air by vehicle exhaust. The project would temporarily generate vehicle trips to the site during project construction. These trips include workers, material, and equipment deliveries.

As analyzed in **Section 5.14, Transportation**, roads in the vicinity of the project area have sufficient capacity to support temporary construction-related traffic while not violating the applicable level of service (LOS) standards. On-going operations of the project would not cause a material increase in traffic volumes within the transportation system affecting the efficiency of the transportation system, including transit, roadway, bicycle, and pedestrian facilities. Any effect of project-generated traffic during construction would be temporary in nature and would not be expected to result in any long-term impacts to the transportation system. Therefore, the project's traffic impact would not have a significant cumulative contribution to the traffic density for the local general population. No disproportionate impacts to an EJ population would occur.

Asthma. The sensitive population indicator in CalEnviroScreen for asthma represents the number of emergency department visits for asthma per 10,000 people. As described in **Section 5.1, Air Quality**, CEC staff concluded that air quality impacts would be less than significant with mitigation incorporated. Furthermore, CEC staff concluded that the project would not result in a cumulatively considerable net increase of any criteria pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Furthermore, according to the results of the health risk assessment conducted for the project cited in **Section 5.10, Public Health**, impacts associated with emissions from construction and operation activities would be less than significant with mitigation incorporated. No disproportionate impacts to an EJ population would occur.

Low Birth Weight Infants. The low birth weight infants indicator in CalEnviroScreen measures the percentage of babies born weighing less than 2500 grams (about 5.5 pounds) out of the total number of Census tract births. As described in **Section 5.1, Air Quality**, CEC staff concluded that air quality impacts would be less than significant with mitigation incorporated. Furthermore, CEC staff concluded that the project would not result in a cumulatively considerable net increase of any criteria pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Furthermore, according to the results of the health risk assessment conducted for the project cited in **Section 5.10, Public Health**, impacts associated with emissions from construction and operation activities would be less than significant with mitigation incorporated. No disproportionate impacts to an EJ population would occur.

Cardiovascular Disease. This indicator in CalEnviroScreen represents the rate of heart attacks. It measures the number of emergency department (ED) visits for acute myocardial infarction (AMI) (or heart attack) per 10,000 people. As described in **Section 5.1, Air Quality**, CEC staff concluded that air quality impacts would be less than significant with mitigation incorporated. Furthermore, CEC staff concluded that the project would not result in a cumulatively considerable net increase of any criteria pollutant, and the project's potential to contribute to the cumulative impact of criteria pollutant concentrations would be less than significant with mitigation incorporated.

Furthermore, according to the results of the health risk assessment conducted for the project cited in **Section 5.10, Public Health**, impacts associated with emissions from construction and operation activities would be less than significant with mitigation incorporated. No disproportionate impacts to an EJ population would occur.

Transportation

The project is not expected to have a disproportionate effect borne by EJ populations. The extent of the transportation impact is related to construction that would primarily affect Byrnes Road and Kilkenny Road. There are no sidewalks or bicycle facilities that exist on roadways accessing the project site or at intersections within the immediate study area. Traffic would mainly be during the construction phase, with minimal operational traffic. The Construction Management Plan would reduce impacts of construction traffic. As presented in **Figure 6-1**, the project site is approximately 0.5 miles from any EJ population and construction traffic would not be driving through EJ communities to reach the project site. Therefore, no disproportionate transportation impacts to an EJ population would occur.

Visual Resources

According to the analysis conducted for the project and presented in **Section 5.15, Visual Resources**, visual impacts associated with the introduction of the proposed project facilities into the existing landscape would be significant and unavoidable. However, the extent of these impacts would be limited to the viewshed immediately surrounding the project and would primarily affect travelers on Kilkenny Road and Byrnes Road, and a very few residential properties immediately north of the project site.

Of the 34 block groups identified as EJ populations by at least one of the EJ population criteria, none of them are within the immediate project viewshed. The boundary of the nearest EJ block group (Block Group 1; Census Tract 2533) is approximately 0.5 miles east of the project site and the views toward the project from that block group would

be substantially screened by intervening vegetation, rural residences, and agricultural buildings. Therefore, no disproportionate visual impacts to an EJ population would occur.

Water Resources

The project would be required to comply with LORS such as the Clean Water Act (CWA) and California's Porter-Cologne Water Quality Control Act by controlling the discharge of pollutants during its construction and operation phases. The project would implement modern stormwater and containment controls that would improve upon the site's potential to release contaminants to the environment.

During construction, the project would require the use of heavy machinery and would involve activities that could potentially loosen existing surface soils and sediments, increasing the potential for erosion and the discharging of pollutants into local waterways. Accidental release of fuel, oils, lubricants, antifreeze, and other pollutants may occur during construction and could result in the infiltration of pollutants into groundwater and the underlying aquifer, degrading water quality in the area. During operations and maintenance of the BESS, accidental spills of hydrocarbon fuels, oils, greases, antifreeze, and other liquids into the underlying groundwater may occur. Additionally, similar to the construction period, groundwater contamination may occur during the decommissioning phase when the project operation will be terminated

Disproportionate water resource impacts to an EJ population could occur if the project contributes to drinking water degradation, exacerbates groundwater contamination, or discharges additional pollutants to impaired surface water bodies. The EJ population .5 miles to the east of the project uses a combination of Solano Irrigation District water and local groundwater.

Common groundwater pollutants found at contaminant releasing sites in California include gasoline and diesel fuels; chlorinated solvents, and other volatile organic compounds; heavy metals such as lead, chromium, and arsenic; polycyclic aromatic hydrocarbons; persistent organic pollutants like polychlorinated biphenyls and pesticides; and perchlorate. The project is not expected to exacerbate groundwater contamination, relative to existing conditions. Requirements to comply with the CWA by controlling the discharge of pollutants during project construction and operation; and implementation of modern stormwater and containment controls would limit the site's potential to release contaminants to groundwater. Therefore, the project is not expected to degrade groundwater quality any further than baseline conditions. No project-related disproportionate groundwater effects to an EJ population would occur.

Prior to any ground disturbing construction activity, the applicant would prepare a construction Stormwater Pollution Prevention Plan (SWPPP) to comply with the Construction General Permit. With the implementation of the SWPPP, development of the site would not cause substantial degradation in the quality, or an increase in the rate or volume, of stormwater runoff from the site during construction. A project

operations Drainage, Erosion, and Sedimentation Control Plan (DESCP) would be prepared to monitor stormwater events and deploy associated best management practices (BMP). No disproportionate impacts from stormwater pollution to an EJ population would occur.

The project does not drain into any water bodies directly but does share a drainage with Ulatis Creek and Sweany Creek before feeding into the San Francisco Bay Delta through a system of drainage ditches that border agricultural parcels. As stated in **Section 5.16, Water Resources**, Ulatis Creek is listed as impaired for pathogens and pesticides, including chlorpyrifos, bifenthrin and diuron. Sweany Creek is listed as "Condition Unknown". The project is not expected to impair local water bodies because it is required to comply with the CWA which requires the project to control the discharge of pollutants during its construction and operation phases. In addition, the project would implement modern stormwater and containment controls that would limit the site's potential to release contaminants to the environment. No disproportionate impacts to EJ populations using the area's water bodies would occur.

Groundwater pumped from the Solano Groundwater Basin would be minimal during both construction and operation. The Solano Basin Groundwater Sustainability Agency (GSA) manages the Solano Groundwater Basin groundwater resource in compliance with the Sustainable Groundwater Management Act (SGMA). The project would not be expected to overdraft this resource and no disproportionate impacts to an EJ population would occur.

6.4 References

ACS 2024 – American Community Survey (ACS). 2019-2023 ACS 5-year Estimates. Tables C17002 (Ratio of Income to Poverty Level in the Past 12 Months) and B03002 (Hispanic or Latino Origin by Race) Accessed online at: https://data.census.gov/

CalEPA 2022 – California Environmental Protection Agency (CalEPA). Final Designation of Disadvantage Communities Pursuant to Senate Bill 535, May 2022. Accessed online at: https://calepa.ca.gov/wp-content/uploads/sites/6/2022/05/Updated-Disadvantaged-Communities-Designation-DAC-May-2022-Eng.a.hp_-1.pdf.

CEQ 1997 – CEQ (Council on Environmental Quality). Guidance Under the National Environmental Policy Act.

CEC 2024 – California Energy Commission. California Energy Commission. Disadvantaged Communities Advisory Group (DACAG). Informational Proceeding on Non-Energy Benefits and Social Costs. CA Disadvantaged Communities Advisory Group Equity Framework. Docket Number 24-OIIP-03. TN#259888.

CEC 2025 – California Energy Commission. Justice Access Equity Diversity Inclusion (JAEDI). Order Instituting Informational Proceeding on Justice, Access, Equity, Diversity, and Inclusion. Docket Number 24-OIIP-01. TN#262648.

LCI 2020 – Office of Land Use and Climate Innovation (LCI). General Plan Guidelines. Chapter 4: Required Elements. 4.8 Environmental Justice Element. Accessed online at: https://lci.ca.gov/docs/20200706-GPG_Chapter_4_EJ.pdf

OEHHA 2021 – California Environmental Protection Agency's Office of Environmental Health Hazard and Assessment (OEHHA). CalEnviroScreen 4.0, October 2021. Accessed online at: https://oehha.ca.gov/media/downloads/calenviroscreen/report/calenviroscreen40reportf2021.pdf

OEHHA 2026 – California Environmental Protection Agency's Office of Environmental Health Hazard and Assessment (OEHHA). Update to the California Communities Environmental Health Screening Tool. Draft CalEnviroScreen 5.0. January 2026. Accessed online at: https://oehha.ca.gov/sites/default/files/media/2026-01/calenviroscreen50techreportd12226.pdf

U.S. EPA 2015 – United States Environmental Protection Agency (U.S. EPA). Guidance on Considering Environmental Justice During the Development of Regulatory Actions, May 2015. Accessed online at: https://19january2025snapshot.epa.gov/environmentaljustice/guidance-considering-environmental-justice-during-development-action/index.html

Section 7

Public Benefits

7 Public Benefits

7.1 Regulatory Setting

Public Resources Code section 24454.8 incorporates Public Resources Code section 25523(h), which states: "The commission shall prepare a written decision after the public hearing on an application, which includes …[a] discussion of any public benefits from the project including, but not limited to, economic benefits, environmental benefits, and electricity reliability benefits." Such identified benefits may be discussed in detail in various sections of staff's environmental assessment such as **Section 10, Mandatory Opt-In Requirements**. A qualitative discussion addressing public benefits is appropriate as there is no specific threshold of benefit necessary under this section for project approval. Consistent with this directive, CEC staff describes, in summary form, the key benefits of the project relating to economic, environmental, and reliability benefits of the project.

7.2 Economic, Environmental and Electric Reliability Public Benefits

Economic

As detailed in **Section 5.11, Socioeconomics**, the project's public benefits include economic benefits typical for a large-scale industrial project with an extended construction period. These benefits include construction employment and associated payrolls; property, sales and use taxes; equipment rentals; and local spending generated by the project and its workforce. Following construction, the project would employ a minimal number of staff and continue to contribute tax revenues to the state and local community.

The project would be in Solano County. Property taxes generated over the life of the Project would make contributions to the County General Fund and Dixon Fire Protection District to help offset any potential fire response and law enforcement costs. Resulting tax revenues would be allocated among 75 taxing entities in Solano County, including the local agencies and districts where the project is located and in accordance with standard distribution formulas. These include the Dixon Unified School District, Dixon Fire Protection Agency, and Solano County Community College.

Construction and operation of the project would generate state and county sales tax revenue. Sales tax liability would depend on the point of sale and the location from which equipment and materials are purchased. In addition to direct revenues, the project would generate indirect and induced fiscal benefits as summarized in the applicant's Opt-In Application, Section 4.14.3 (TT 2024c). Project construction would generate approximately $18.2 million in sales and use tax revenues, with $3.4 million accruing to the County. Over the lifetime of the project, operational total tax revenue from property taxes would be approximately $70.5 million (TT 2024c).

Environmental

As discussed in **Section 3, Project Description**, the project's battery storage system would also contribute to the state's 100 Percent Clean Energy Act of 2018 (Senate Bill 100, De León, Chapter 312, Statute of 2018) policy objectives with a 2045 goal of California's electricity system to be carbon free by capturing and storing renewable energy when generation is plentiful and dispatching energy for use when it is scarce.

Reliability

Reliability is an evaluation of the robustness of the state's electrical system, the grid, and the project's impact on that system. As discussed in **Section 3, Project Description**, BESS facilities can assist grid operators in more effectively integrating intermittent renewable resources into the statewide grid. The project would include a battery energy storage system capable of storing up to 300 MW of electricity for four hours (up to 1,200 megawatt-hours).

During the first five months of 2025, California ISO curtailed over 2,742 GWh of renewable energy. The project would store excess energy available on the grid, up to 1,200 MWh, which could otherwise be curtailed. This stored energy would be available for use later during peak demand hours. By reducing excess renewable energy curtailment, this project would help California progress towards its goal of zero-emission grid as mandated by SB 100. The project's generation capacity, available during peak demand hours when it's needed the most, would give the grid operator greater flexibility and increase grid reliability. Overall, this project would add to the reliability of the state's electric grid and help reduce curtailment of renewable energy. More detailed discussion of the potential benefits is provided in **Section 4.3, Transmission System Engineering**.

Conclusions

Consistent with Public Resources Section 25523(h), this section provides a summary description of the economic, environmental, and reliability benefits of the project. Information regarding community benefits (Pub. Resources Code, § 25545.10) and net positive economic benefit to the local government (Pub. Resources Code, § 25545.9, which applies under the Opt-In program established by Assembly Bill 205 and Senate Bill 254) is discussed in **Section 10, Mandatory Opt-In Requirements**.

References

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Section 8

Alternatives

8 Alternatives

8.1 Introduction

This section evaluates a reasonable range of potentially feasible alternatives to the Corby Battery Energy Storage System (BESS) Project (project). As the California Environmental Quality Act (CEQA) lead agency for the project, the California Energy Commission (CEC) is required to identify and evaluate a range of reasonable alternatives to the project that would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the project's significant effects. The guiding principles for selection of the alternatives analyzed are derived from the CEQA Guidelines (Cal. Code Regs., tit. 14, section 15000 et seq.) described in detail below in the subsection 8.3, "CEQA Requirements."

In developing alternatives for consideration, CEC staff reviewed all relevant filings by the applicant related to the proposed project. First, CEC staff reviewed the alternatives discussion provided in the 2024 Opt-In application (Chapter 5) (TT 2024c). The application evaluated two site alternatives, four gen-tie route alternatives, and four technology alternatives. During CEC staff's review of the project application for completeness, staff requested information from the applicant related to: additional site alternatives north of I-80, potential site alternatives at Lambie Industrial Park and Montezuma Wind Energy Center, gen-tie routes for each of the site alternatives, non-lithium-ion battery technology alternatives, and assumptions used to screen each of the technology alternatives (CEC 2024e, 2025h, and 2025j).

The applicant's responses to these data requests provided further detail on potential alternative sites and their associated gen-tie line routes, as well as alternative descriptions for non-lithium-ion battery alternatives, including an iron-air battery alternative (TT 2025d, 2025l, and 2025m). CEC staff reviewed the alternatives information provided by the applicant in both the application and the data request responses, which served as a starting point for the alternatives analysis presented in this Staff Assessment (TT 2024c, 2025d, 2025l, and 2025m). Additionally, the alternatives analyzed within this section include those recommended through agency and public comment, as well as those developed by CEC staff.

Alternatives that have been evaluated are either eliminated from further consideration or evaluated against the Corby BESS Project to determine if they meet the basic objectives of the proposed project and would reduce or avoid any significant environmental impacts of the proposed project as defined by CEQA. As discussed in subsection 8.8, "Alternatives Selected for Analysis and Comparison to the Project," the Lambie Industrial Park Alternative and the Central Overhead Gen-tie Route Alternative were determined to warrant detailed analysis and comparison to the Corby BESS Project. Alternatives eliminated from detailed analysis are also discussed in this section, including the reasons for their elimination.

Table 8-4 lists CEC staff members who contributed to this Alternatives section.

8.2 Summary of Conclusions

Table 8-3 provides a summary comparison of the environmental impacts from the Corby BESS Project, the No Project Alternative, the Lambie Industrial Park Alternative, and the Central Overhead Gen-tie Route Alternative. The No Project Alternative would avoid or substantially lessen the impacts expected to occur under the Corby BESS Project. As shown in Table 8-3, overall impacts associated with construction and operation of the Lambie Industrial Park Alternative and the Central Overhead Gen-Tie Route Alternative would be of a similar level of severity as the impacts associated with the proposed project.

8.3 CEQA Requirements

CEQA requires that an EIR "consider a reasonable range of potentially feasible alternatives [to the project] that will foster informed decision making and public participation" (Cal. Code Regs., tit. 14, section 15126.6, subd. (a)). Section 15126.6 of the CEQA Guidelines provides that the alternatives analysis must include all the following:

- Description of a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project;
- Evaluation of the comparative merits of the alternatives;
- A focus on alternatives that would avoid or substantially lessen any significant effects of the project, even if these alternatives would impede to some degree attainment of the project objectives, or would be more costly; and
- Description of the rationale for selecting alternatives to be discussed and identification of alternatives that were initially considered but then rejected from further evaluation.

Alternatives may be eliminated from detailed consideration by the lead agency if they fail to meet most of the basic project objectives, are infeasible, or could not avoid any significant environmental effects of the proposed project (Cal. Code Regs., tit. 14, section 15126.6, subd. (c)). In addressing the feasibility of alternatives, factors typically considered are:

- Site suitability;
- Economic viability;
- Availability of infrastructure;
- General plan consistency and/or other plans or regulatory limitations;
- Jurisdictional boundaries; and
- Whether the project proponent can reasonably acquire, control, or otherwise have access to the alternative site (Cal. Code Regs., tit. 14, section 15126.6, subd. (f)(1)).

California Code of Regulations, title 20, section 1201(h) defines "feasible" as "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors."

The issue of feasibility arises at two different junctures: (1) in the assessment of alternatives in the EIR, and (2) during the agency's later consideration of whether to approve the project. For the first phase (i.e., inclusion in the EIR), the standard is whether the alternative is potentially feasible. By contrast, at the second phase (i.e., the final decision on project approval), the decision-making body evaluates whether the alternatives are actually feasible. (See CEQA Guidelines section 15091(a)(3)). At that juncture, the decision makers may reject alternatives that were identified in the EIR as potentially feasible with a determination that such alternatives are actually infeasible (*California Native Plant Society v. City of Santa Cruz* (2009), 177 Cal. App. 4th 957).

The range of potentially feasible alternatives selected for analysis is governed by a "rule of reason," requiring the evaluation of only those alternatives "necessary to permit a reasoned choice" (Cal. Code Regs., tit. 14, section 15126.6, subd. (f)). Also, an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative" (Cal. Code Regs., tit. 14, section 15126.6, subd. (f)(3)).

The lead agency is also required to evaluate the impacts of the "No Project" alternative. Analyzing a "No Project" alternative allows decision makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project (Cal. Code Regs., tit. 14, section 15126.6, subd. (e)(1)). Section 15126.6 subd. (e)(2) of the CEQA Guidelines states:

> *The 'no project' analysis shall discuss the existing conditions at the time the notice of preparation is published . . . as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and consistent with available infrastructure and community services. If the environmentally superior alternative is the 'no project' alternative, the EIR shall also identify an environmentally superior alternative among the other alternatives*.

8.4 Project Objectives

Section 15124(b) of the CEQA Guidelines addresses the requirement for an EIR to contain a statement of objectives, as follows:

> *A clearly written statement of objectives will help the lead agency develop a reasonable range of alternatives to evaluate in the EIR and will aid the decision makers in preparing findings or a statement of overriding considerations, if necessary. The statement of objectives should include the underlying purpose of the project and may discuss the project benefits.*

The project's Opt-In application identified the following project objectives (TT 2024a):

- Construct and operate a 300-megawatt (MW) BESS close to Pacific Gas and Electric Company's (PG&E) Vaca-Dixon Substation in Solano County to meet contractual obligations to provide energy storage services.
- Develop a BESS that supports grid stability and helps prevent local and regional blackouts.
- Develop a BESS that supports the efficient use of renewable energy and California's Renewables Portfolio Standards (RPS) goals.

The application states that the construction and interconnection of a BESS to the Vaca-Dixon Substation is a basic objective of the project given existing agreements between the applicant and both PG&E and the California Independent System Operator (California ISO). To verify this statement, CEC staff reviewed the project's Large Generator Interconnection Agreement (LGIA) that was executed in June 2021 (DayZenLLC 2025b). The LGIA specifically allows for the interconnection of a 300 MW BESS to PG&E's Vaca-Dixon Substation. As such, CEC staff acknowledges that construction and interconnection of a BESS to the Vaca-Dixon Substation is a basic objective of the project.

The application further states that construction of a BESS to support California's RPS goals and improve grid stability is a basic objective of the project. California's RPS targets were increased under Senate Bill (SB) 100, which also established a Statewide policy of supplying all retail electricity sold in California with zero-carbon resources. The 2021 SB 100 Joint Agency Report (prepared by CEC, California Public Utilities Commission, and California Air Resources Board) identifies energy storage as an essential component to improve grid stability and to integrate renewable generation into the transmission grid (CEC 2021). CEC staff acknowledges that development of a BESS to support California's renewable energy procurement targets is a basic project objective.

CEC Staff's Alternatives Screening Process

Staff used the methodology summarized below to prepare the analysis of alternatives.

- Identify the potential significant environmental impacts of the project.
- Describe the objectives of the proposed project.
- Identify and evaluate feasible alternatives that meet most of the basic project objectives, while avoiding and/or substantially lessening the project's signficant impacts.
- Evaluate the comparative (to the proposed project) merits of the alternatives.

8.5 Public and Agency Participation

CEC staff, in determining the scope and content of this analysis, considered oral and written scoping comments received to date from agencies and the public regarding

alternatives to the proposed project. Preparation of the Corby BESS Project alternatives analysis included staff's review of the following:

- Oral and written comments provided during the CEC Informational and Environmental Scoping Meeting held in Vacaville, California, on November 6, 2025 (CEC 2026a).
- Written comments filed to the Corby BESS Project Docket: 24-OPT-05 (CEC 2024a).
- Oral comments provided during the Solano County Board of Supervisors hearing on Solano County Ordinance No. ZT-25-02 held on November 4, 2025 (SC 2025c).
- Independent research and analysis of alternative sites and alternative technologies.

Applicable public and agency comment themes that pertain to the CEQA alternatives analysis are summarized in **Table 8-1**.

TABLE 8-1 THEMES OF COMMENTS RECEIVED ON ALTERNATIVES DEVELOPMENT AND ANALYSIS

Issue	Comment Theme Summary
Alternative Technologies	During the scoping period, members of the public expressed safety concerns associated with lithium-ion battery technology. Comments were focused primarily on the risk of thermal runaway. Members of the public suggested alternative technologies including sodium-ion batteries, vanadium redox flow batteries, zinc-based flow batteries, iron-air batteries, and advanced solid-state and aqueous technologies.
Alternative Sites	During the scoping period, members of the public expressed concerns with land use compatibility, including the proposed site's proximity to water resources, prime farmland, planned residential communities, and Interstate 80. Comments suggested building the project at an alternative location that is farther away from water infrastructure, major highways, and areas planned housing, and not on Important Farmland. Comments from the public requested that the Staff Assessment analyze alternative sites that would be compatible with the County's new BESS ordinance and/or in industrial-zoned areas. Numerous comments requested that the Staff Assessment evaluate the Lambie Industrial Site as a project alternative.
Water Usage	During the scoping period, members of the public expressed concerns regarding the project's water use requirements and potential impacts to groundwater. Scoping comments included a request to evaluate alternative sources of water for the project.

Note: Comments submitted during the 2024-2026 Opt-In review process can be accessed through the Docket Log for the Corby Battery Energy Storage System Project (Docket: 24-OPT-05).

8.6 Environmental Impacts of the Project

This Staff Assessment evaluates the environmental impacts of implementing the proposed project. One of the purposes of an alternatives analysis is to consider alternatives that would avoid or lessen the significant effects of a project. Significant effects from construction or operation of the Corby BESS Project are summarized in **Section 1, Executive Summary, Table 1-1**, and are described in detail in each of

the respective issue area analyses of this Staff Assessment. CEC staff has identified one or more significant environmental effects for the following issue areas:

- Air Quality (Section 5.1)
- Biological Resources (Section 5.2)
- Cultural and Tribal Cultural Resources (Section 5.4)
- Geology, Paleontology, and Minerals (Section 5.6)
- Hazards, Hazardous Materials/Waste, and Wildfire (Section 5.7)
- Land Use and Agriculture (Section 5.8)
- Noise and Vibration (Section 5.9)
- Public Health (Section 5.10)
- Transmission Line Safety and Nuisance (Section 5.13)
- Transportation (Section 5.14)
- Visual Resources (Section 5.15)
- Water Resources (Section 5.16)

CEC staff's proposed conditions of certification are presented in each issue area section along with the associated identified significant effects.

8.7 Alternatives Considered and Not Evaluated Further

The alternatives described in the subsections that follow were considered but eliminated from detailed consideration. Alternatives that were not carried forward for full analysis include five technology alternatives, seven site alternatives, three gen-tie route alternatives, and a reduced project alternative. The following provides CEC staff's reasons for eliminating these alternatives from detailed analysis and comparison to the proposed project.

Technology Alternatives

8.7.1 Fuel Cell Technology Alternatives

Fuel cells convert chemical energy into electrical energy. There are several types of fuel cells, which vary according to the types of electrochemical reactions that take place in the cells, the types of catalysts required, the operating temperature ranges, the fuel requirements, and other factors affecting the applications suitable for the fuel cells.

Solid Oxide Fuel Cells

Solid Oxide Fuel Cells (SOFCs) are electrochemical devices that convert the chemical energy of a fuel and oxidant directly into electrical energy. They operate at high temperatures, as high as 2,100 degrees Fahrenheit (°F). Operating at high temperatures enables these fuel cells to use a variety of fuels to produce hydrogen

(H2). SOFCs most commonly use natural gas as fuel but can also use biogas and gases made from coal as fuel (DOE 2025a). Carbon monoxide (CO) may be produced as an intermediate during the fuel reforming process that converts natural gas and steam into H2 for use in the fuel cell.

SOFCs are resilient and not susceptible to CO poisoning, which affects the voltage output of other types of fuel cells, such as polymer electrolyte membrane (PEM) fuel cells (also called proton exchange membrane fuel cells). SOFCs can reform fuel internally due to their resiliency against CO poisoning and because they operate at extremely high temperatures. This reduces the cost associated with adding an external reformer to the balance of plant. However, SOFCs require long start-up time to reach operating temperature in order to generate electricity, and they are typically configured and more suitable to serve as a prime base load power.

Potential Feasibility Issues

SOFC applications include serving base load power for data centers, retail, healthcare, and critical manufacturing facilities. Additionally, some data centers (e.g., Apple and Equinix) have supplemented their base load power demand (IT and cooling systems) with SOFCs, but they rely on the electric grid to support other loads while retaining traditional uninterruptible power supply and generators for emergency power (Data Center Knowledge 2013).

SOFCs have slow startup times because it takes time to reach critical operating temperatures—start-up times can take up to 60 minutes (GenCell 2018). The California ISO real-time market can issue dispatch instructions with as little as 5–15 minutes' notice[1]. Start-up times should be quick enough so that a project can be dispatched with little notice. The Corby BESS project would be designed to discharge 1,200 megawatt-hours (MWh) of stored electrical energy back to the transmission grid when the energy is needed.

For an SOFC to use an underground natural gas pipeline system for fuel, at least one pipeline connection would be needed to supply the project with natural gas. However, for SOFCs to meet the proposed project's objective of developing an energy storage project that "supports the efficient use of renewable energy and California's RPS goals," it would need to be fueled by hydrogen. The H2 pipeline infrastructure is currently limited (approximately 1,600 miles of H2 pipelines in the U.S.), and no pipeline exists near the project site. Therefore, this alternative would require H2 to be stored onsite or generated and stored onsite. See the subsections, "Onsite Fuel Storage" and "Onsite Generation," below, for further discussion.

1 The California ISO Real-Time Market Activities provides guidelines for running the real time market process and for procuring ancillary services in the real time market.

PEM Fuel Cells

PEM fuel cells are typically used for low-power applications that require intermittent power, such as mobile services or backup generators. Their power capacity ranges between 10 kilowatts (kW) up to 1 MW. The larger (1 MW) PEM fuel cell systems are housed in containers that are approximately 40 feet by 8 feet (Plug Power 2024). The width of each container is 8 feet, making the total area occupied by each container 320 square feet (sq. ft.). An approximately 96,000 sq. ft., or 2.2-acre site would be required to accommodate a PEM fuel cell that would have an equivalent storage capacity as the proposed project (i.e., 300 MW). This footprint would increase if onsite fuel storage is required.

PEM fuel cells operate at low temperatures and require fuels that are carbon-free and rich in H2 content, preferably pure H2, for maximum voltage output and quick start-up times. H2 can be stored onsite via pressure vessels, piped to the site, or made onsite from a methane source, such as natural gas or from water through electrolysis. These options are discussed in more detail below. Unlike SOFCs, CO poisoning is an important issue for PEM fuel cells because they cannot tolerate large amounts of CO (Fuel Cell Store 2019).

Potential Feasibility Issues

There are potential feasibility issues associated with using PEM fuel cells for utility-scale generation, including the supply of H2 fuel. The H2 pipeline infrastructure is currently limited; therefore, H2 would need to be stored onsite, or generated and stored onsite, as described below.

Onsite Fuel Storage. Both a 1-MW PEM fuel cell and a 1-MW SOFC consume 66–69 kilograms (kg) of H2 fuel per megawatt-hour (MWh) (Plug Power 2023). A fuel cell project comparable to the proposed project would need fuel to power generation for up to 4 hours. Using the midpoint value of the fuel cell's average consumption range (i.e., 67.5 kg/MWh), the amount of H2 needed per 1-MW fuel cell for 4 hours of operation would be approximately 270 kg.[2] Thus, a fuel cell project comparable to the proposed project would need approximately 81,000 kg of H2 for 300 MW of fuel cells to operate for 4 hours (not including redundant fuel cells).

The simplest way to store large volumes of H2 would be to compress it. H2 can be compressed to less than 0.42 percent of its gas volume at atmospheric pressure. The gauge pressure of H2 stored as a high-pressure gas is approximately 3,600 pounds per square inch (psi) (DOE 2001). Compressed H2 could be transported and stored onsite on a Type IV trailer, which is approximately 53 feet long, 8.5 feet wide, and 13 feet tall, and would support eight, 25-foot-long cylinders of H2 with a total capacity of approximately 1,100 kg (Gardner Cryogenics 2022). The project would need approximately 74 trailers and 33,340 sq. ft. (approximately 0.8 acres) of space onsite to store fuel for 300 MW of fuel cells for up to 4 hours of operation. Alternatively, the

2 Hydrogen fuel calculation: 67.5 kg per hour x 4 hours = 270 kg of hydrogen per 1 MW fuel cell.

project could construct a storage system that includes one large or several small pressure vessels to store the compressed H2. The project site would need storage for approximately 142,860 cubic feet,[3] or 3.3 acre-feet (AF) of compressed H2 for 300 MW of fuel cells (not including redundant fuel cells).

H2 can also be stored in liquid form, known as liquid hydrogen gas (LHG), to reduce its volume and thus its storage footprint. LHG storage requires a smaller footprint than compressed H2 gas for the same H2 fuel capacity. LHG could be transported and stored on the same trailer type as compressed H2. However, LHG would have a larger volume of H2 capacity, approximately 4,400 kg, that could be stored on a single LHG trailer (Gardner Cryogenics 2022). To store the fuel needed for 300 MW of fuel cell capacity for 4 hours of operation, the project would need approximately 19 trailers for LHG storage, which would require 8,560 sq. ft. (approximately 0.2 acres) of space onsite. Alternatively, as mentioned above, the project could include construction of a storage system with one to several pressure vessels to store LHG. The project would need approximately 40,430 cubic feet[4] (approximately 0.9 AF) of LHG for 300 MW of fuel cells (as compared to 142,860 cubic feet [approximately 3.3 AF] for compressed H2 gas).

Although LHG has the benefit of requiring a smaller footprint than compressed H2, problems exist with storing the liquid. LHG would need to be stored and distributed in specialized equipment, including insulated storage tanks, to keep the fuel in liquid state at atmospheric pressure, which requires a temperature of -423 degrees Fahrenheit. For LHG to remain at a constant temperature and pressure, it must allow for natural evaporation known as boil-off gas (BOG). BOG is a loss of stored fuel that occurs when the ambient temperature heats the insulated tanks. LHG must release this gas to maintain its liquid state. The release in gas occurs at a rate of approximately 1 percent per day (Army Logistician 2000).

Other constraints exist for both compressed and liquified H2 storage systems. Safely managing these systems would require special expertise and equipment, which would add to the cost and complexity of the proposed project. Fuel storage equipment must comply with the standards specified by the National Fire Protection Association along with the local codes to protect against hazardous material release, fire, and explosions during natural disasters and accidents. Additionally, permits for the storage of hazardous materials would be needed pursuant to the local codes. The presence of such storage systems would also likely raise public safety concerns (for example, due to the flammability of H2) and introduce new compliance and potential safety impacts that would not occur under the proposed project.

3 Compressed Hydrogen fuel conversion calculation: 67.5 kg per hour x 4 hours x 1/240 compression ratio x 423.3 cubic feet per kg x 300 MW = 142,860 cubic feet for 300 MW fuel cell.
4 Liquid Hydrogen fuel conversion calculation: 67.5 kg per hour x 4 hours x 1/848 compression ratio x 423.3 cubic feet per kg x 300 MW = 40,430 cubic feet for 300-MW fuel cell.

Onsite Generation. Alternatively, H2 for both PEM fuel cells and SOFCs can be supplied using other methods, such as electrolysis. Electrolysis is a promising option for carbon-free hydrogen production, using electricity to cause the chemical reaction of splitting water into hydrogen and oxygen. The reaction takes place in a unit called an electrolyzer. Like fuel cells, electrolyzers consist of an anode and a cathode separated by an electrolyte. There are different types of electrolyzers mainly due to the different electrolyte materials, such as PEM, alkaline, and solid oxide, but their function is essentially the same—generating H2 (DOE 2025b).

A 1-MW PEM electrolyzer, with an approximate size of a 40-foot-long by 8-foot-wide container, can generate 18 kg of H2 per hour. For a 300-MW system, the footprint required for the system would be 96,000 sq. ft. (approximately 2.2 acres). For every 1 kg of H2 produced, the electrolyzer would need 10 kg of water and 49.9 kilowatt-hour (kWh) of energy (Plug Power 2022). H2 would need to be produced and stored onsite for future use during power generation. As discussed above under "Onsite Fuel Storage," onsite storage of H2 has feasibility issues, including storage space, BOG, the need for specialized equipment, and concerns about public safety.

Reliability Issues for Fuel Cell Technology – Summary of Conclusions

Fuel cells for large-scale peak power demand are not fully proven and have various feasibility constraints, including storage space, BOG, the need for specialized equipment, concerns about public safety, and undetermined reliability. Securing fuel for the cells and storing this fuel is a challenge that requires specialized expertise and increased costs for installing and maintaining systems. Because of the limitations described above, fuel cell technology is currently not a feasible alternative to the project's proposed technology.

8.7.2 Alternative Battery Energy Storage Technologies

Energy storage technologies are categorized based on the type of energy they store, which is ultimately converted to electrical energy, such as electrochemical storage, mechanical storage, or thermal storage. The proposed project would utilize a 4-hour lithium iron phosphate battery technology, which is characterized as a short duration energy storage system (TT 2026g). Staff considered other short duration battery technologies, as well as long-duration energy storage (LDES) systems. The U.S. Department of Energy (DOE) defines LDES systems as storage systems capable of delivering electricity for 10 or more hours in duration. Storage systems that can provide electricity for longer than 8 hours are also considered LDES systems.[5]

Nickel Manganese Cobalt Oxide Batteries

Nickel Manganese Cobalt Oxide (NMC) batteries are a lithium-ion sub-chemistry that functions similarly to most other lithium-ion batteries; Li^+ ions leave the cathode during

5 In its Decision Requiring Procurement to Address Mid-term Reliability for 2023–2026 and subsequent decisions (D. 21-06-035), the California Public Utilities Commission (CPUC) specifies that long-duration storage means a resource that can deliver at maximum capacity for at least 8 hours.

charge and travel through the internal liquid electrolyte to the anode and are stored there as electrical energy to be discharged. NMC batteries offer a few advantages, including high energy density (Evro et al. 2024). The higher energy density also allows for a smaller physical footprint compared to more traditional lithium-ion battery chemistries. NMC has been used in projects of multiple sizes in the U.S., meaning there is proven use of the technology (Mitsubishi Electric 2023).

Potential Feasibility Issues

NMC batteries require stricter safety measures as they have some disadvantages that can lead to decreased stability and a higher risk of thermal runaway, including a smaller safe temperature window and high release of heat and gas during failure. There have been multiple examples of runaway events including an explosion in the 2-MW APS McMicken BESS in Arizona and a major fire in the 750-MW Vistra Moss Landing BESS facility in California. In addition, NMC batteries have a lower cycle life than other chemistries and wear out quickly.

Lithium Titanate Batteries

Lithium titanate (LTO) batteries are another lithium-ion sub-chemistry used in BESS technology that function similarly to its other sub-chemistries (Global Batteries 2025). The advantages of LTO batteries include a high-cycle life span due to an inherent resistance to lithium plating at the anode, as well as a low degradation rate even at partial charge (Tycorun 2025). This chemistry also has a very low risk of thermal runaway in comparison to other lithium-ion battery types as it has a wide range of safe operable temperatures and has a very low risk of lithium plating (Nichicon 2025).

Potential Feasibility Issues

Some of the disadvantages of LTO batteries include a relatively low energy density, causing the system to require a larger footprint to match the output of other systems. Also, current BESS implementations of LTO batteries are mostly at low MW capacity and more focused on short duration energy supply rather than serving the grid for long durations.

Lead-acid Batteries

Lead-acid battery storage is a mature, widely commercialized technology driven by its applications in transportation. Lead-acid battery storage serves both stationary and automotive applications and is widely used in microgrid systems. The basic components of a typical rechargeable lead-acid battery system include a lead dioxide (PbO2) positive electrode, a spongy lead (Pb) negative electrode, an electrolyte solution made of higher concentration of aqueous sulfuric acid solution (H2SO4[aq]) and water. There are several subtypes of lead-acid batteries, each with unique advantages and challenges, including: vented lead-acid, valve-regulated lead-acid, absorbent glass mat, and hybrid systems (NREL 2021). Lead-acid batteries have low upfront costs relative to newer battery technologies, including lithium-ion.

Potential Feasibility Issues

Several characteristics, such as their short cycle life and inability to remain uncharged for long periods or to be deeply discharged without permanent damage, have limited their use in utility-scale power system applications. Lead-acid batteries are likely better suited in off-grid applications such as in isolated microgrids, particularly where upfront costs can be a barrier. Lead-acid battery technology was rejected from further analysis because it is not suitable for large, utility-scale power systems (NREL 2021).

Sodium-ion Batteries

Sodium-ion batteries (SIBs) are a battery type that function similarly to lithium-ion batteries wherein Na+ ions leave the cathode to carry electric charge through the internal liquid electrolyte to the anode and are stored there as electrical energy to be discharged (DOE 2023a). Sodium-ion batteries have some advantages, including the abundance of its primary resource, sodium, as well as a relatively wide set of safe operational temperature ranges (IMI 2025). Sodium-ion batteries have a significantly lower risk of catastrophic thermal runaway due to lower intrinsic reactivity and a lower heat of reaction compared to most lithium-ion cells, which leads to a decreased risk of propagation in the event of failure.

Potential Feasibility Issues

SIBs are not a mature technology and currently there are only two SIB grid-scale project deployed world-wide, with another project under construction.

The US Utilities Pilot for Peak Energy's grid-scale sodium-ion BESS was successfully deployed and became operational on September 26, 2025. This shared pilot program was installed at the SolarTAC renewable energy test facility in Watkins, Colorado, in collaboration with nine participating utilities and independent power producers. The demonstration SIB’s capacity is 3.5 MWh

Anhui Conch Cement (China): The world’s largest sodium-ion BESS to date was brought on-line in November 2025, with a capacity of 500 MW / 2,000 MWh

Jupiter Power (Texas): US startup Peak Energy is deploying a 720 MWh system scheduled for 2027, with an option to expand to 4.75 GWh.

The safety and reliability of SIB utility scale BESS units has not been determined.

There were two promising companies working on SIB technology deployment that ceased operations in 2025 due to high costs and supply chain inadequacies (Natron Energy and Bedrock Materials). Most grid-scale projects have been implemented in China, where performance data is not readily available. SIBs can also have sensitivity to moisture, which leads to a faster degradation rate in addition to generally having a lower cycle life compared to most lithium-ion batteries. This chemistry also typically has a much lower energy density, making it less space efficient compared to other alternatives such as some lithium-ion battery types. High operating temperatures (300 –

350 degrees Celsius) present safety issues, which have caused safety failures leading to fires (NREL 2021).

Aqueous Redox Flow Batteries

Aqueous redox flow batteries (RFBs) convert chemical energy into electrical energy by pumping an aqueous electrolyte solution between two storage tanks (positively and negatively charged) with one or more battery cell stacks in between. The battery cells consist of electrodes (anode and cathode) and are divided by an ion-exchange membrane which permit ions to pass during reduction and oxidation chemical reactions (redox reactions). Also, the battery cells are connected to an external electrical circuit which allows for charging and discharging. The design of RFBs allows for the separation of power generation at the battery cell stacks and energy capacity at the electrolyte storage tanks (Adeniran et al. 2022).

Various RFB technologies have been developed with different chemistries, which include vanadium, iron, and zinc. RFB technology can discharge almost 100 percent of its stored energy without impacting system performance or damaging the battery. Because the active electrolytic material is separated from the reactive electrodes in the battery, RFBs have a higher level of safety relative to other electrochemical energy storage technologies. The separation also means that the energy and power capacity of RFBs are independently scalable and modular. The flexibility in design means that RFBs can be configured for specific needs and applications (NREL 2021). Staff considered the vanadium RFBs and iron RFBs since these technologies have demonstrated the ability to provide electricity for 8 or more hours.

Vanadium Redox Flow Batteries. The vanadium RFB technology takes advantage of the properties of vanadium as vanadium may exist in four different oxidation states in solution. As a result, vanadium electrolyte is used in both tanks of the RFB. Vanadium RFB technology offers several advantages, including no risk of thermal runaway, no permanent contamination from the diffusion of vanadium ions across the membrane, simple regeneration of ion crossover through normal battery operation, and lower levels of gas evolution during rapid charge cycles compared to other flow batteries. Additionally, there is potential for electrolyte recycling between applications. However, there are some disadvantages, such as the need for thermal regulation systems to maintain temperatures between 10 and 40 degrees Celsius to prevent thermal precipitation of vanadium species (Lourenssen et al. 2019).

Potential Feasibility Issues (Vanadium RFB). Vanadium RFB applications include provision of peak power and end-of-line voltage support, deferral of conventional transmission and distribution upgrades, and load leveling at substations. Vanadium RFB has low energy density compared to lithium-ion, with lower efficiencies, and requires more physical space for storage. Additionally, vanadium supply is currently limited, with high upfront costs. Although vanadium RFB has less fire risk than lithium-ion, it forms hydrogen gas in low amounts that can pose a serious hazard to workers or people near the site (Yan et al. 2023; Duan et al. 2026).

More recently, vanadium RFBs have been used as battery storage coupled with renewable power generation. A microgrid application planned by Indian Energy (a Native American-owned microgrid developer) in San Diego County includes a total of 70 MWh of vanadium flow and zinc hybrid cathode battery technologies capable of discharging over a 10-hour duration (CEC 2025r). The full system is expected to be operational in 2025. Although vanadium RFBs have demonstrated the capability of providing LDES of 8 or more hours, there have not yet been proven demonstrations at the scale of the proposed project. It could take several years for this technology to be proven as a reliable, safe, and operationally dependable options for a utility-scale energy storage project.

Iron Redox Flow Batteries. The iron RFB technology that utilizes an all-iron construction contains iron in different valance states for both electrodes and aqueous ferrous chloride solutions for the two tanks of electrolyte. Iron RFBs are cost-effective due to the affordability of iron salts, which are abundant and cheaper than vanadium used in other flow batteries. Graphite electrodes and less expensive electrolytes contribute further to reduced costs. Overall, the design and materials make all-iron redox flow batteries an economical alternative to vanadium-based systems (Dinesh et al. 2018). ESS, Inc. offers a flexible and modular system for utility-scale applications using iron flow batteries with up to 8 hours of continuous discharge (ESS 2025a). The first commercial deliveries of demonstration products for these modular systems occurred at the end of 2024 (ESS 2025b).

Potential Feasibility Issues (Iron RFB). Similar to vanadium RFBs, the iron RFB technology has not yet been proven at the scale of the proposed project. In July 2024, the Sacramento Municipal Utility District (SMUD) announced its partnership with ESS Tech, Inc. to implement an iron RFB demonstration project in Sacramento that will provide 3.6 MW over an 8-hour duration. Successful completion of the project will enable SMUD to scale the deployment of iron flow LDES up to 200 MW (SMUD 2024). The demonstration project is in its early phases at SMUD's Sacramento Power Academy. It will take some years for this large-scale facility to prove its operational reliability. Commercially available iron RFBs are designed for standard containerized constructions and would likely require a larger footprint for the LDES system than the vanadium RFBs.

Metal-air Flow Batteries

Metal-air flow batteries (MABs) transform chemical energy into electrical energy through redox reactions, forming solid metal oxides that can be recycled. MABs use oxygen from the surrounding air as a cathode source and include an electrolyte which can be either aqueous or non-aqueous depending on the anode material. Additionally, their anodes can be made from affordable materials such as iron. The iron-air MAB utilizes an aqueous electrolyte solution.

In MABs, metal at the anode converts into ions, while oxygen at the cathode forms hydroxide ions. Oxygen diffuses through a gas diffusion layer, interacting differently with aqueous and non-aqueous electrolytes. During discharge, electrons are released as

metal ions dissolve into the electrolyte; these processes are reversed during charging. However, non-ideal conditions may lead to the precipitation of solid discharge products, consuming active electrolytes and reducing energy density (Olabi et al. 2021).

Potential Feasibility Issues

MAB applications include a Form Energy, Inc. demonstration iron-air LDES system being installed next to the PG&E substation in Redwood Valley in Mendocino County. It is designed to produce 1.5 MWs for up to 100 hours (150 MWh). Form Energy received a grant from the CEC in 2023 to build a 5-MW battery system at the site. The battery systems would occupy approximately 3.5 acres (CEC 2023). This LDES system is expected to be operational in 2026 (The Press Democrat 2025, CEC 2025r). Currently, there is no proven demonstration of this type of system at the proposed project's scale. Additionally, MABs have lower round-trip efficiencies between charging and discharging compared to other electrochemical storage options.

While non-lithium BESS technologies are progressing, scalability, cost, and storage duration remain key barriers. Non-lithium LDES has not yet reached the size and scale needed to provide an equivalent storage capacity as the proposed project. Continued innovation, cost reductions, and technological breakthroughs will determine its future viability for large-scale deployment.

Sodium-sulfur Batteries

Sodium-sulfur batteries are a type of high-temperature battery that relies on a reversible redox reaction between molten sodium and sulfur to charge and discharge electricity. Sodium-sulfur batteries have high energy densities, which can make them advantageous for areas with space constraints. Sodium-sulfur batteries are in the initial commercialization phase, marked by high energy density, low levels of self-discharge (which correspond to higher efficiencies), and relatively long cycle life. These storage systems rely on common, abundant, and cheap materials, which may help drive down costs relative to storage systems reliant on scarce minerals (NREL 2021). In addition, sodium-sulfur batteries have high reliability and can be easily installed, relocated, and maintained.

Potential Feasibility Issues

These batteries operate at high temperatures, which presents certain safety issues that could limit applications. Several notable safety failures of deployed sodium-sulfur systems, which caused fires, combined with declining lithium-ion costs, have led to declining deployments (NREL 2021). However, sodium-sulfur battery technology was rejected from further analysis primarily because it is not a proven technology at the scale of the project.

8.7.3 Compressed Air Energy Storage

Compressed Air Energy Storage (CAES) is a technology that stores energy by compressing air during periods of low energy demand and releasing it to generate

electricity during peak demand. The compressed air is typically stored in underground caverns, such as salt domes or depleted natural gas fields, which provide the necessary geological formations to contain the pressurized air. The compression process involves using electricity to power compressors, allowing the air to be stored efficiently in a compressed state. When energy is needed, the compressed air is released, heated, and expanded through a turbine to generate electricity.

Potential Feasibility Issues

The feasibility of CAES systems is often constrained by geological requirements, as suitable underground formations are not universally available. Additionally, the larger footprint required for both the storage facilities and the associated infrastructure can limit implementation in certain locations. In the context of the project, geological constraints and space limitations would render CAES technology an infeasible alternative. The proposed project site does not have the suitable geology to support development of this alternative.

8.7.4 Pumped Thermal Energy Storage

Pumped thermal energy storage (PTES) technology uses a system of hot and cold media to store energy converted from electricity in the form of heat inside a thermal medium. The process uses a reversible heat pump to charge and discharge storage tanks to both store and provide electricity to a host facility or the electricity grid.

PTES takes power from another source and stores it for use later when additional energy is needed. As PTES does not produce any energy on its own, it needs to be connected to the grid or some other source that produces power.

PTES is primarily implemented with two main methods: solid storage media and liquid storage media. Solid storage systems are generally cheaper to produce and maintain and can support a wide range of internal media temperatures. They use solids such as ceramics or refractory bricks that can withstand high temperatures without significant degradation. These materials are also relatively cheap and easy to procure. The solid materials used are also generally more stable under cyclic thermal loading than liquid materials, removing the need for specialized containment vessels or measures. The solids also retain heat longer than fluids due to their low thermal conductivity, making them more suitable for long-term storage.

Low thermal conductivity also contributes to a low rate of heat exchange, which can bottleneck the rate of discharge when the electricity needs to be drawn from storage. The materials inside the system are also subject to thermal stresses over a long period of usage, which may cause cracking and disintegration of the media over time. Low thermal conductivity for solids also requires a larger volume of material to store comparable amounts of energy compared to liquid media. Stratification, which is when distinct thermal layers form in a medium instead of staying at a consistent temperature throughout the entire material, can also occur depending on how the material is laid out

in the storage chambers. Stratification can contribute to uneven distribution of thermal energy within the chambers.

Liquid storage media in PTES systems are typically more difficult to produce and maintain than solid systems but offer more consistency and efficiency as a result. Storage materials include molten salt, thermal oils, or water which have a high thermal conductivity and are much easier to pump and move around due to their nature as liquids. This minimizes mechanical energy loss. Liquid media allow for more compact designs as they are more efficient at storing heat as well as being more scalable in design which makes them significantly more suitable for grid-scale applications. Liquids also do not experience mechanical stress due to thermal cycling and can effectively eliminate the risk of thermal stratification as they are self-mixing.

Liquid media are significantly more volatile than solids and can be difficult to process and maintain and each of the media options has its challenges. Molten salts and thermal oils specifically can be highly corrosive which requires specialized containment units and frequent maintenance. Molten salts also have a high freezing point which requires higher temperatures in both the hot and cold reservoirs. Thermal oils also degrade over time and form toxic byproducts that can impede operational efficiency. Liquids in general are subject to containment issues such as evaporative losses, corrosion, and pressure losses.

Potential Feasibility Issues

While PTES is not considered a mature technology, there are some planned implementations. In 2024, Westinghouse Electric Company announced a 1.2-gigawatt-hour PTES system by Echogen to be implemented in Healy, Alaska that would function in support of planned wind power facilities (DOE 2024). Echogen's roadmap includes small-scale testing from 2021 to 2025, followed by large-scale demonstrations and commercial projects between 2026 and 2029. Mass deployment is anticipated from 2030 onward. Other companies are currently developing PTES, but they have not yet fully matured their systems. These developments suggest that PTES technology is nearing readiness for large-scale deployment, with ongoing projects and strategic partnerships supporting its integration into the energy sector, but the technology is not yet mature enough to be considered as a viable alternative to the project's proposed technology.

8.7.5 Supercapacitor Energy Storage Systems

Supercapacitor energy storage systems are devices engineered to store and release electrical energy with remarkable speed, making them ideal for applications that demand quick bursts of power. Unlike conventional batteries, supercapacitors store energy through electrostatic charge rather than chemical reactions, which allows for rapid charge and discharge cycles. This characteristic enables supercapacitors to excel in critical applications, such as providing ride-through power for essential infrastructure and enhancing power quality in renewable energy systems (DOE 2023b; Liu et al. 2023).

Potential Feasibility Issues

While supercapacitors have been widely adopted in various commercial applications in the automotive and consumer electronics sectors, they typically exhibit lower energy density compared to batteries, making them less suitable for long-duration energy storage. In the energy sector, supercapacitors have been typically deployed for short-term backup power and frequency control applications or coupled with a secondary energy storage technology. Their higher self-discharge rates and associated energy losses further limit their efficiency for prolonged storage solutions (Zhang et al. 2023). Due to their limited energy density, passive discharge rate, and lower efficiency compared to batteries, supercapacitors are not a feasible alternative technology for the proposed project.

8.7.6 100 Percent Hydrogen-fueled Power Plant

The 100 percent hydrogen-fueled power plant technology uses combustion turbines and heat exchangers to burn up to 100 percent hydrogen (H2) as a fuel source to generate power. H2 is abundant but not a readily available resource and would need to be produced onsite in a separate facility or provided from an offsite source. In addition, 100 percent H2-capable turbines require specialized equipment that has only recently become commercially available and is not yet a proven technology for large-scale applications.

100 percent H2-fueled power plants use combustion turbines to burn pure H2 to cleanly generate electricity. Burning pure H2 only produces electricity, heat, and water vapor as byproducts as this is a carbon-free fuel. In addition, though not renewable, H2 is plentiful in the environment and effectively limitless, with its primary source being the atoms in water.

Simple cycle natural gas-fueled turbines demonstrate higher energy conversion efficiencies of around 40–42 percent. For combined cycle natural gas-fueled turbine units, the efficiency is around 54–56 percent. In comparison, combined cycle H2-fueled combustion turbines are expected to reach roughly 60 percent efficiency. However, similarly, with higher combustion temperatures, some combined cycle natural gas combustion turbines equipped with advanced turbine blade materials can also reach an efficiency of 59–60 percent. Assuming a favorable 60 percent efficiency rate and using the lower heating value of H2 of 33,330 kWh/metric ton, a 100 percent hydrogen fueled power plant would require 60 metric tons of H2 per day to meet the same 1,200-MWh expected energy storage capacity as the proposed project.

H2 has a very high flame temperature (2,045 °C in air) as well as a much higher flame speed (approximately 3 meters/second [m/s]) compared to natural gas (1,960 °C and approximately 0.3 m/s, respectively). These factors greatly increase the risk of flashback in a combustion turbine due to the risk of the flame propagating backward into other zones inside the turbine. Blowback is also possible as the high flame speed can cause the fluid to move at high velocity during combustion and possibly push the reacting H2 out of the combustor or extinguish the flame outright. Due to these risks,

turbines designed to burn 100 percent H2 are required to safely use this fuel as measures must be included to mitigate flashback and blowback. Standard natural gas turbines cannot be used for this project without retrofitting to minimize the risks.

According to combustion turbine manufacturers, certain new models can be constructed that will soon have pre-planned upgrades available to install, reportedly allowing them to align to turbine compatibility with up to 100 percent H2 combustion (U.S. EPA 2023). In addition, the world's three largest turbine manufacturers have made commitments to develop advanced technologies by 2030 or sooner that will enable additional models of new heavy-duty combustion turbines to fire 100 percent H2. For certain existing larger models, manufacturers are developing retrofits that will allow those units to safely increase their levels of H2 co-firing up to 100 percent.

Pure H2 burning also provides pathways for nitrous oxide (NOx) emissions to form as a byproduct of the fuel burning process. Although pure H2 creates no chemical byproducts, the high temperature that is required to burn H2 causes reactions with air that can oxidize free nitrogen in the air and form NOx emissions. The primary way to mitigate this issue is to mix in air to bring the reaction temperature down to a value where these reactions are less likely to occur, but that is not currently an option when using 100 percent H2.

Potential Feasibility Issues

Pure H2, while abundant, is not a readily available resource. To use 100 percent H2, it must be produced either on or offsite for use in a facility, as described above for the fuel cell technology alternative. Furthermore, carbon-free H2 production methods are not widely implemented, and the resulting emissions can be significant. More than 95 percent of H2 production in the United States is through the steam-methane reforming process, which requires natural gas and yields carbon-based byproducts (U.S. EPA 2023). The reliance on carbon-producing H2 production methods would not be compatible with the project purpose and basic objectives to support California's RPS targets (see subsection "8.4 Project Objectives" above).

The proposed project's 300-MW BESS facility would occupy approximately 40 acres. The 100 percent hydrogen-fueled power plant alternative would require infrastructure comparable to those found in combined cycle natural gas-fueled power plants, such as a water treatment plant, combustion turbines, and heat exchangers. A project proposed by the Los Angeles Department of Water and Power (LADWP) plans to retrofit the existing approximately 50-acre LADWP Scattergood Generating Station with a 346-MW gross capacity 30 percent H2-fueled, rapid-response, combined-cycle generation system (CCGS), with the goal to burn 100 percent H2 by 2035. However, the acreage of the LADWP CCGS project does not account for the necessary production, transportation, and storage infrastructure for "green" H2 (carbon-free H2) (LADWP 2026). The Corby BESS facility would be located on an agricultural site with no existing H2 pipeline nearby.

Further, onsite production of green H2 would require significantly more acreage than the proposed project's BESS facility. For example, the Darden Clean Energy Project, which proposed but ultimately eliminated a green H2 facility, would have required a 225-acre site for the H2 facility. The proposed green H2 facility would have produced up to 140 metric tons of gaseous H2 per day and would have required 1,000 acre-feet of water per year. The H2 facility would have consisted of an electrolyzer, water treatment plant, and ancillary equipment. The Corby BESS facility's total available acreage is only approximately 40 acres, which could not accommodate an H2 facility. There would be significant additional costs associated with building the infrastructure needed for the 100-percent hydrogen fueled power plant, both for offsite transportation via a hydrogen pipeline or an onsite green H2 facility. Therefore, the alternative would likely be economically infeasible.

In summary, the proposed project intends to support the efficient use of renewable energy, such as wind and solar, by storing the electrical energy from those sources when generation exceeds demand. The 100 percent hydrogen-fueled power plant alternative would need to be coupled with hydrogen production via electrolysis to use excess renewable generation. The processes involved with H2 production via electrolysis would introduce additional inefficiencies compared to directly storing and discharging excess generation with a BESS. For example, a typical PEM electrolyzer has an electrical efficiency of up to 60 percent (U.S. EPA 2023). A BESS would be a more efficient use of excess generation with its approximately 85 percent round-trip efficiency. Because of the limitations described above, the 100 percent hydrogen-fueled power plant technology is not a feasible alternative to the proposed project.

Site Alternatives

CEQA Guidelines Section 15126.6 (f)(2) requires that an EIR consider alternative locations for a proposed project and further states, "If the lead agency concludes that no feasible alternative locations exist, it must disclose the reasons for this conclusion, and should include the reasons in the EIR."

To identify alternative sites that could meet the basic objectives of the project listed in subsection 8.4, "Project Objectives," of this Staff Assessment, the applicant has stated that there are two siting requirements for an alternative site (TT 2024c):

- Parcel size. The applicant has stated that an alternative site must be at least 25 acres to accommodate a 300-MW BESS facility.
- Interconnection. The applicant has stated that an alternative site must be able to connect to the Vaca-Dixon Substation per interconnection agreements between the applicant, PG&E, and California ISO.

The project's Opt-In application includes information for two alternative sites (TT 2024c). However, CEC staff reviewed parcel maps of the area surrounding the Vaca-Dixon Substation and identified four additional parcels that meet the applicant's minimum acreage requirements of 25 acres and would require a shorter gen-tie line

than the proposed project site. On July 25, 2025, CEC staff submitted a request to the applicant to provide additional information on the potential feasibility of these four parcels as site alternatives (CEC 2025h). CEC staff also reviewed the Solano County Board of Supervisors meeting minutes from August 12, 2025, and August 26, 2025, which included discussion of the Lambie Industrial Park as a suitable site for a BESS facility (SC 2025c and 2025d). A number of public comments submitted to the docket have also identified Lambie Industrial Park as a possible site alternative (CEC 2024a). In reviewing parcel maps of the area surrounding the Lambie Industrial Park, CEC staff noted that the Montezuma Wind Energy Center, which is owned by the applicant, is located near the Lambie Industrial Park and could be a suitable site for a BESS facility. On September 26, 2025, CEC staff submitted a request to the applicant to provide information on the potential feasibility of the Lambie Industrial Park and the Montezuma Wind Energy Center as site alternatives (CEC 2025j).

In response to staff's data requests, the applicant provided information on the feasibility of potential alternative sites on May 23, 2025, in Data Request Responses Set #2 Part 1 (TT 2025d), September 5, 2025, in Data Request Response #3 (TT 2025l), and October 3, 2025, in Data Response Set #4 (TT 2025m). Below is a summary of the information provided by the applicant and supplemented by CEC staff research for each of these potential site alternatives.

8.7.7 Applicant Alternative Site 1

The applicant included information for Alternative Site 1 in the project application (TT 2024c). Alternative Site 1 is a 164-acre parcel (APN 0109220010) within the City of Vacaville. The parcel has a City of Vacaville General Plan designation of Technology Park (TP) and is zoned as Agriculture (AG). The parcel is located within the City's Northeast Growth Area Overlay District.

Alternative Site 1 is an active orchard (TT 2024c; Google Earth Pro 2025). The site abuts agricultural uses to the south and west. Residential development is located along the site's north side across Midway Road, and along the northwest side across North Meridian Road. The site's southeast corner abuts I-80, while the site's southwest corner is near Vaca-Dixon Substation, with North Meridian Road separating the site from the substation.

According to the applicant, there are no conserved lands, FEMA-mapped flood zones, potentially jurisdictional aquatic features, and no USFWS-designated critical habitat within Alternative Site 1 (TT 2024c). CEC staff reviewed Important Farmland map data from the Department of Conservation (DOC) and determined that Site 1 contains three categories of designated Important Farmland: Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (DOC 2025).

The applicant states that PG&E will not allow a gen-tie line to cross over the gas regulation station that is located on the southeast corner of Vaca-Dixon Substation adjacent to the I-80 southbound onramp and North Meridian Road (TT 2024c). The

applicant has identified two possible gen-tie routes from Alternative Site 1 to Vaca-Dixon Substation (TT 2024c; TT 2025d; Google Earth Pro 2025):

- Site 1 Eastern Gen-Tie Route. This 1.22-mile gen-tie would begin at the southeast corner of Site 1. It would travel approximately 2,800 feet south, across I-80, to Weber Road. The gen-tie would turn west and travel approximately 3,400 feet along Weber Road, across I-80 again, until it reaches the point of interconnection (POI).
- Site 1 Western Gen-Tie Route. This 2.04-mile gen-tie would begin at the southwest corner of Site 1. It would travel approximately 2,600 feet west to the Vaca Dixon Solar Station, where it would turn south and travel approximately 5,000 feet to Quinn Road. The gen-tie would then turn northeast and travel approximately 2,700 feet along Quinn Road to the POI.

Potential Feasibility Issues

CEC staff conducted further research on the alternative site to identify the potential for new impacts. CEC staff eliminated this site from further consideration based on the factors listed below.

- Given the proximity of the alternative site to the proposed project and the similarity of the site's existing habitat (i.e., agriculture), the types of biological resources potentially affected by this alternative would be similar to the proposed project. The alternative is not expected to reduce or avoid the proposed project's biological resource impacts.
- The alternative site would not avoid impacts to Important Farmland. This alternative would result in the conversion of DOC-designated Prime Farmland, Farmland of Statewide Importance, and Unique Farmland.
- The alternative site is an active orchard, and development of the site would impact an established agricultural use.
- The alternative site would not avoid sensitive receptors. There are residences adjacent to this alternative.

8.7.8 Applicant Alternative Site 2

The applicant included information for Alternative Site 2 in the project application (TT 2024c). Alternative Site 2 is a 95-acre parcel (APN 0109040030) within unincorporated Solano County. The parcel has a County General Plan designation of Agriculture (AG) and is zoned Exclusive Agriculture (A-40). The parcel is located within the County's Agricultural Reserve Overlay.

Alternative Site 2 is actively farmed with row crops and an orchard (TT 2024c; Google Earth Pro 2025). The site abuts agricultural uses on all sides. The northwest side of the site is adjacent to rural residential uses. Additional residential development is located near the southwest corner of the site.

According to the applicant, there are no conserved lands, FEMA-mapped flood zones, potentially jurisdictional aquatic features, and no USFWS-designated critical habitat within Alternative Site 2 (TT 2024c). CEC staff reviewed Important Farmland map data from the Department of Conservation and determined that Site 2 contains three categories of designated Important Farmland: Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (DOC 2025).

The applicant states that PG&E will not allow a gen-tie line to cross over the gas regulation station that is located on the southeast corner of Vaca-Dixon Substation adjacent to the I-80 southbound onramp and North Meridian Road (TT 2024c). The applicant has identified two possible gen-tie routes from Alternative Site 2 to Vaca-Dixon Substation (TT 2024c; TT 2025d; Google Earth Pro 2025):

- Site 2 Eastern Gen-Tie Route. This 3.48-mile gen-tie would begin at the southwest corner of Site 2. It would follow Sweeney Creek southeast for approximately 5,800 feet, cross I-80, and travel southwest and south for approximately 6,200 feet along Lewis Road. The gen-tie would turn west at Weber Road and travel approximately 6,000 feet, across I-80 again, until it reaches the POI.
- Site 2 Western Gen-Tie Route. This 4.28-mile gen-tie would begin at the southwest corner of Site 2. It would travel approximately 6,200 feet along the south boundary of an orchard and along Melissa Lane, until it reaches the west side of PG&E's transmission corridor. It would turn south and follow the transmission corridor for approximately 7,000 feet towards the Vaca-Dixon Solar Station. Upon reaching the Solar Station, the gen-tie would continue approximately 5,800 feet south towards Quinn Road. The gen-tie would then turn northeast and travel approximately 2,700 feet along Quinn Road to the POI.

Potential Feasibility Issues

CEC staff conducted further research on the alternative site to identify the potential for new impacts. CEC staff eliminated this site from further consideration based on the factors listed below.

- Given the proximity of the alternative site to the proposed project and the similarity of the site's existing habitat (i.e., agriculture), the types of biological resources potentially affected by this alternative would be similar to the proposed project. The alternative is not expected to reduce or avoid the proposed project's biological resource impacts.
- The alternative site would not avoid impacts to Important Farmland. This alternative would result in the conversion of DOC-designated Prime Farmland, Farmland of Statewide Importance, and Unique Farmland.
- The alternative site is an active agricultural site containing row crops and an orchard, and development of the site would impact an established agricultural use
- This alternative site would not avoid sensitive receptors. There are residences adjacent to this alternative site and gen-tie routes.

8.7.9 APN 0109270040

The applicant included information for Alternative APN 0109270040 in Data Request Response #3 (TT 2025l). This site is an approximately 68-acre parcel within unincorporated Solano County that is located 0.3 miles northeast of the Vaca-Dixon Substation, south of I-80. The parcel has a County General Plan designation of AG and a zoning designation of A-20. This site is designated by DOC as Grazing Land. The applicant reported that a wetland or drainage is present on the northwestern boundary of this parcel adjacent to Interstate 80. According to the applicant's review of aerial imagery, this aquatic feature appears to drain/flow through the eastern portion of this parcel during some years (TT 2025l).

Potential Feasibility Issues

CEC staff conducted further research on the alternative site to identify the potential for new impacts. Staff eliminated this site from further consideration based on the factors listed below.

- Given the proximity of the alternative site to the proposed project and the similarity of the site's existing habitat (i.e., agriculture), the types of biological resources potentially affected by this alternative would be similar to the proposed project. The alternative is not expected to reduce or avoid the proposed project's biological resource impacts.
- The alternative site is actively farmed, and development of the site would impact an established agricultural use.

8.7.10 APN 0109270010

The applicant included information for Alternative APN 0109270010 in Data Request Response #3 (TT 2025l). This site is an approximately 57-acre parcel within unincorporated Solano County that is located 0.3 miles northeast of the Vaca-Dixon Substation, north of I-80. The parcel has a County General Plan designation of Agriculture (AG) and a zoning designation of Exclusive Agriculture A-20. Aerial imagery and Solano County parcel data confirm this parcel is actively farmed (SC 2026; Google Earth Pro 2025). This parcel comprises DOC-designated Important Farmland, including Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (DOC 2025). Surrounding parcels include other DOC-designated Important Farmland and Grazing Land to the north, east, and south, the Vaca-Dixon Substation to the west, and adjacent to I-80. Surrounding parcels include other DOC-designated Important Farmland and Grazing Land on all sides (DOC 2025). Per CEC staff review of aerial imagery, this site appears to be actively farmed (Google Earth Pro 2025). The applicant states that there is an existing residence located on this parcel.

Potential Feasibility Issues

CEC staff conducted further research on the alternative site to identify the potential for new impacts. CEC staff eliminated this site from further consideration based on the factors listed below.

- Given the proximity of the alternative site to the proposed project and the similarity of the site's existing habitat (i.e., agriculture), the types of biological resources potentially affected by this alternative would be similar to the proposed project. The alternative is not expected to reduce or avoid the proposed project's biological resource impacts.
- The alternative site would not avoid impacts to Important Farmland. This alternative would result in the conversion of DOC-designated Prime Farmland, Farmland of Statewide Importance, and Unique Farmland.
- The alternative site is actively farmed, and development of the site would impact an established agricultural use.
- This alternative site would not avoid sensitive receptors. There is a residence on the alternative site.

8.7.11 APN 0106250140

The applicant included information for Alternative APN 0106250140 in Data Request Response #3 (TT 2025l). This site is an approximately 96-acre parcel within unincorporated Solano County that is located 0.2 miles north of the Vaca-Dixon Substation, north of I-80. This site has a County General Plan designation of Public Quasi-Public (PGP) and a zoning designation of A-20. This parcel comprises DOC-designated Important Farmland, including Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (DOC 2025). The applicant states that this parcel is owned by PG&E and has been reserved for future expansion of the Vaca-Dixon Substation. Parcels containing DOC-designated Prime Farmland, Unique Farmland, and Farmland of Statewide Importance are located east of the site, while other surrounding uses include residential uses to the north, Vaca-Dixon Solar Station to the west, and Vaca-Dixon substation to the south (DOC 2025; Google Earth Pro 2025).

Potential Feasibility Issues

As stated by the applicant, this parcel is owned by PG&E and has been reserved for future expansion of the Vaca-Dixon Substation. Therefore, this parcel is not available for acquisition and is not a feasible alternative site for the project (TT 2025l).

8.7.12 APN 0133110020

The applicant included information for Alternative APN 0133110020 in Data Request Response #3 (TT 2025l). This site is an approximately 147-acre parcel within unincorporated Solano County, located 0.2 miles south of the Vaca-Dixon Substation, south of I-80. This site has a General Plan designation of AG and a zoning designation of Exclusive Agriculture A-40 (A-40). This site comprises DOC-designated Important Farmland, including Prime Farmland, Farmland of Statewide Importance, and Unique Farmland (DOC 2025). Parcels to the north and east of the site contain DOC-designated Important Farmland. The applicant states that the site is bordered to the west and south by approximately 15 rural residential properties.

This site is maintained as a pasture and is surrounded by active agriculture to the north and east (Google Earth Pro 2025). The applicant has stated that the Vaca-Peabody 230-kV transmission line runs through the relative center of this site from north to south (TT 2025l). As described in the applicant's Cultural Resources Inventory Report prepared for the project (Confidential Appendix 4.5-A), this transmission line is related to the Vaca-Dixon Historic District and was recommended as Significant under National Register of Historic Places (NRHP)/California Register of Historical Resources (CRHR) Criterion A/1 and NRHP/CRHR Criterion C/3 at the state level of significant, with a period of significance of 1926 when the line was constructed (TT 2025l).

Potential Feasibility Issues

CEC staff conducted further research on the alternative site to identify the potential for new impacts. CEC staff eliminated this site from further consideration based on the factors listed below.

- Given the proximity of the alternative site to the proposed project and the similarity of the site's existing habitat (i.e., agriculture), the types of biological resources potentially affected by this alternative would be similar to the proposed project. The alternative is not expected to reduce or avoid the proposed project's biological resource impacts.
- Due to the Vaca-Peabody 230-kV transmission line across this alternative site, impacts to a historic resource may be greater than the proposed project.
- The alternative site would not avoid impacts to Important Farmland. This alternative would result in the conversion of DOC-designated Prime Farmland, Farmland of Statewide Importance, and Unique Farmland.
- The alternative site is used as a pasture, and development of the site would impact an established agricultural use.
- The alternative site would not avoid sensitive receptors. There are residences adjacent to this alternative.

8.7.13 Montezuma Wind Energy Center

Montezuma Wind Energy Center, which is owned and operated by the same parent company as the applicant, is located approximately 1.6 miles south of the Lambie Industrial Park in unincorporated Solano County. The land on which this project is sited is based on lease arrangements and is not owned by the applicant. The applicant identified a 25-acre site adjacent to the existing Montezuma Hills Wind Energy Center collector substation as a possible location for a BESS facility. This site has a County General Plan designation of AG and a zoning designation of Exclusive Agriculture A-160. This site is DOC-designated grazing land and currently under a Wiliamson Act contract.

Construction of a BESS at this site would require a longer gen-tie of at least 19.5 miles, which the applicant calculated using a conservative point-to-point approach (TT 2025m). CEC staff assumes that a new gen-tie route from Montezuma Wind Energy

Center would follow an existing transmission corridor, such as the PG&E corridor located immediately west of this site. The PG&E transmission corridor currently contains a 500-kV line and a 230-kV line. This segment of the PG&E transmission corridor travels northwest through the active wind farm to the Lambie Energy Center, after which it continues northwest across railroad tracks, agricultural land, and residential areas for a total length of approximately 20 miles. This alternative site is located on rolling hills and ranges from 210 feet to 280 feet above mean sea level. The site is within an active wind farm and would be surrounded by wind turbines. Thie site would be accessed by Birds Landing Road and Montezuma Hills Road via State Route 12.

Potential Feasibility Issues

This alternative site is located on rolling hills that would require more grading than the proposed project site, potentially increasing the environmental impacts associated with project construction. Additionally, the extent to which sensitive biological or cultural resources are present within the alternative site is unknown. It is not possible to reasonably assess whether use of the site would reduce the significant biological and cultural resources impacts of the proposed project. Site control for this project is unknown. The gen-tie route for this project would be significantly longer than the proposed project and would have greater potential environmental impacts and constraints throughout the route, including site control, biological and cultural impacts, agricultural impacts, and visual impacts. Given the uncertainty of whether this site could be developed with a BESS facility, staff has eliminated this alternative site from further consideration.

Gen-Tie Route Alternatives

The project's Opt-In application includes information for four alternative gen-tie routes, which are illustrated in the project's application Section 5.4, Figure 5-2 (TT 2024c). Below is a summary of the information provided by the applicant and supplemented by CEC staff research for three of these gen-tie route alternatives. The fourth gen-tie route alternative is discussed in subsection 8.8.3 (Central Overhead Gen-Tie Route Alternative).

8.7.14 Western Gen-Tie Route

The Western Gen-Tie Route would extend for approximately 1.4 miles. This alternative route includes both overhead and underground segments. This alternative route would follow the same route as the proposed project as it leaves the BESS facility and travels west along Kilkenny Road, but would continue farther west and northwest across 2 additional agricultural parcels, crossing a 500-kV line and two 230-kV transmission lines at 90-degree angles before crossing I-80 southwest of Vaca-Dixon Substation. The line would then travel northeast either within Quinn Road or adjacent to it, crossing the same 500-kV and 230-kV lines before interconnecting at Vaca-Dixon Substation. This route would pass through seven parcels that are not owned by the applicant or PG&E. It would not parallel any existing transmission lines and would create a new corridor to the Vaca Dixon substation.

Potential Feasibility Issues

This route was dismissed from further evaluation as it would create a new transmission line corridor that does not parallel an existing right-of-way (ROW) across 3 additional parcels (compared to the proposed gen-tie route) and would not lessen or avoid any of the impacts associated with the proposed project.

8.7.15 Eastern Overhead City of Vacaville Gen-Tie Route

The Eastern Overhead City of Vacaville Gen-Tie Route would be an overhead-only route that would be approximately 1.1 miles in length. This route would exit the proposed project substation to the north within the City of Vacaville until it reaches Weber Road, where it would turn west and would follow an existing 60-kV transmission line and Weber Road. The alternative route would cross the eastbound I-80/Weber Road/Meridian Road offramp and the westbound I-80/North Meridian Road onramp before interconnecting at Vaca-Dixon Substation. The alternative route would pass through two parcels that are not owned by the applicant or PG&E.

Potential Feasibility Issues

This route was dismissed from further evaluation as it would create a new transmission line corridor that does not parallel an existing ROW across 2 additional parcels (compared to the proposed gen-tie route) and would not lessen or avoid any of the impacts associated with the proposed project.

8.7.16 Eastern Overhead County Gen-Tie Route

The Eastern Overhead County Gen-Tie Route would be an overhead-only route that would be approximately 1.4 miles in length. This route would exit the proposed project substation and travel north within Solano County following the same alternative alignment as the Eastern Overhead City of Vacaville Gen-Tie Route. This route would cross an existing 60-kV transmission line and I-80, and then travel south along North Meridian Road, crossing a 500-kV transmission line and the 60-kV transmission line again before interconnecting at Vaca-Dixon Substation. This route would not parallel any of the existing transmission lines and would create a new corridor into Vaca-Dixon Substation. The alternative route would pass through 8 parcels, of which five have residences in proximity to the route. The applicant had discussions with PG&E regarding this route, during which PG&E stated that North Meridian Road was too constrained to route an additional transmission line along this road segment (TT 2024c). PG&E also stated that it would not allow a transmission line to cross the gas regulation station located at the south end of North Meridian Road, between Vaca-Dixon Substation and the I-80 southbound onramp (TT 2024c).

Potential Feasibility Issues

This route was dismissed from further evaluation as it would create a new transmission line corridor that does not parallel an existing ROW across 5 additional parcels (compared to the proposed gen-tie route) and would not lessen or avoid any of the

impacts associated with the proposed project. Further, PG&E has stated that this route would be infeasible as it would not allow a transmission line to cross the gas regulation station located at the south end of North Meridian Road.

Size Alternative

8.7.17 Reduced Project Alternative

When considering alternatives that would feasibly attain most of the basic objectives to the project while avoiding or substantially lessening the project's significant impacts, CEC staff often evaluates a reduced project alternative. A reduced project alternative typically has a smaller project footprint that allows the project to avoid a particular sensitive resource or to establish a larger buffer from adjacent uses.

The proposed project is located on an approximately 40.3-acre parcel and would occupy approximately 16.1 acres within that parcel (TT 2026a). The proposed project would initially construct 303 BESS enclosures and would continue to install an additional 38 BESS enclosures over the project's lifetime for a total of 341 installed BESS enclosures at the project's "end of life" (TT 2026a). The distance from the residential parcel adjacent to the project site along Kilkenny Road and the nearest BESS enclosures would be approximately 880 feet.

CEC staff considered whether a smaller BESS project would allow for an increased distance from the BESS enclosures and the adjacent residential parcel. To increase this distance, staff evaluated a reduced project alternative that would eliminate the northernmost set of batteries (i.e., 126 BESS enclosures) for a reduced capacity of 175 MW and duration of 700 MWh. Under a reduced project alternative, the distance from the adjacent residential parcel to the nearest BESS enclosures would increase by approximately 260 feet, for a total distance of approximately 1,140 feet.

Potential Feasibility Issues

In considering the feasibility of a reduced project alternative, CEC staff evaluated whether this alternative would avoid or substantially lessen any of the proposed project's significant impacts. The following describes the extent to which a reduced project would avoid impacts to sensitive resources or sensitive receptors.

- **Biological Resources.** Removal of 126 BESS enclosures would reduce the acreage of permanent disturbance by approximately 3 acres, for a total project footprint of 13.1 acres. However, potential impacts to sensitive species within the project site would continue to occur from the 13.1 acres of site disturbance. While there would be fewer acres of permanent disturbance under this alternative, impacts to sensitive species within the site would not be avoided. COCs recommended for the proposed project would still be required for a reduced project alternative. Therefore, a 3-acre reduction in the permanent disturbance at the site would not substantially lessen or avoid potential impacts to biological resources.

- **Cultural and Tribal Cultural Resources.** While a reduced project alternative would reduce the total acreage of permanent disturbance by 3 acres, the alternative would not substantially lessen the potential for undiscovered buried archeological resources or human remains to be damaged during construction. The proposed project's cultural resource COCs would also apply to this alternative. A reduced project alternative would not substantially lessen or avoid potential impacts to cultural and tribal cultural resources.
- **Geologic Hazards.** Potential risks from geologic hazards on people and property under a reduced project alternative would be similar to the proposed project. Although several of the geologic units underlying the project site have a "high sensitivity" for potential paleontological resources, the small reduction in acreage under this alternative would make no appreciable difference in the potential for project construction to discover or damage paleontological resources during excavation. A reduced project alternative would not substantially lessen or avoid potential impacts to geologic and palaeontologic resources.
- **Land Use and Agriculture.** A reduced project alternative would continue to occupy a single parcel that contains DOC-designated Important Farmland, and the construction and operation of a smaller BESS facility would still convert this parcel to non-agricultural use. The proposed project's land use and agricultural COCs would also apply to this alternative. A reduced project alternative would not substantially lessen or avoid potential impacts to agricultural resources.
- **Public Health and Hazards.** Potential exposure to hazards and public health risks under a reduced project alternative would be similar to the proposed project. While the nearest residential property would be an additional 260 feet further from the BESS enclosures, CEC staff determined that the risk of exposure to substantial pollutant concentrations would not notably change from the proposed project. The proposed project's hazards and public health-related COCs would also apply to this alternative. A reduced project alternative would not substantially lessen or avoid potential impacts associated with exposure to hazards and public health risks.
- **Visual Resources.** Under a reduced project alternative, the general location and massing of the BESS facility would not change to a noticeable degree, and construction of a screening and sound wall along Kilkenny Road would still be required. The proposed project's COCs would continue to apply to this alternative. A reduced project alternative would not substantially lessen or avoid potential impacts to visual resources.

CEC staff has reviewed the potentially affected resources within the project site and considered whether a smaller project footprint would substantially reduce or avoid project impacts. A reduced project alternative would not result in fewer parcels, nor would it reduce any of the project's anticipated impacts to a notable degree. Staff has determined that the proposed project's potential impacts cannot be avoided by reducing the project size.

8.8 Alternatives Selected for Analysis and Comparison to the Project

The following alternatives were selected for full evaluation in this EIR:

- Alternative 1: No Project Alternative
- Alternative 2: Lambie Industrial Park
- Alternative 2: Central Overhead Gen-Tie Route

Both the Lambie Industrial Park Alternative and the Central Overhead Gen-Tie Route Alternative appear more feasible than the dismissed alternatives (discussed earlier) to avoid or reduce the proposed project's potentially significant impacts. The following analysis includes a comparative analysis of the impacts of each alternative, as well as an assessment of each alternative's feasibility and ability to meet the project objectives. The comparative analysis is centered on the impacts addressed in **Section 5, Environmental Impact Assessment**, of this Staff Assessment. This analysis is followed by subsection 8.9, "Environmentally Superior Alternative," and a table summarizing the comparison of impacts (**Table 8-3**).

8.8.1 No Project Alternative

Overview

As the proposed project would construct and operate a new BESS facility, per CEQA Guidelines section 15126.6(e)(3)(B), the "no project" alternative would address "…[t]he environmental effects of the property remaining in its existing state against environmental effects which would occur if the project is approved." The no project scenario must also consider the foreseeable actions that may occur following disapproval of the proposed project (CEQA Guidelines section 15126.6(e)(3)(B)).

Description

Under the No Project Alternative, the proposed development of the 300-MW BESS and its ancillary facilities would not occur. None of the on-site substation components would be constructed. There would be no underground or overhead construction of a 1.1-mile 230-kV gen-tie line from the proposed site to the Vaca-Dixon Substation.

As there are currently no other known proposals for future use of the project site, it is likely that the land would continue to be managed for uses permitted within the site's current zoning of Exclusive Agriculture (A-40). Allowable uses within an A-40 zone include crop production, animal ranch facilities, agricultural processing facilities, commercial agricultural uses (e.g., agritourism, farm supply store or produce market, veterinary clinic), single-family residential, and infrastructure uses (e.g., pipeline, transmission or distribution line, commercial or noncommercial wind turbine generator).

The No Project Alternative includes the continued operation of existing conventional and renewable energy generation facilities in Solano County that are listed below.

- Five natural gas peaker plants are located within Solano County, which include Vaca Dixon-CalPeak Power (50 MW), Lambie Peaker (48 MW), Goose Haven Peaker (48 MW), Creed Energy Center (48 MW), and Wolfskill Peaker (48 MW).
- Existing wind generation facilities are located in the Montezuma Hills Wind Resource Area (i.e., Shiloh Wind, Solano Wind, Montezuma Wind, High Winds, and EDF-RE V), which is south of State Route 12. The total installed generation capacity within the Montezuma Hills Wind Resource Area is over 1,000 MW (SC 2025d).
- Ground-mounted and structure-mounted solar facilities are located throughout Solano County, with capacities ranging from 1 MW to 14 MW (SC 2025d).
- Two landfill gas facilities are located in Solano County, which include the Potrero Hills Landfill facility (8 MW) and B & J Landfill (1.6 MW).
- One 2.4-MW battery storage system is in operation within Solano County (i.e., Vaca Dixon Battery Storage) and is located within the Vaca-Dixon Substation property.

Other energy storge facilities within Solano County could be constructed under the No Project Alternative that would support the proposed project's secondary objectives of improving grid stability and facilitating California's efforts to meet its renewable energy procurement targets. In order for a new generation or storage project to connect to the transmission grid, a project applicant must submit an interconnection request to California ISO and enter the ISO's interconnection queue. Besides the proposed Corby BESS project, there are currently four other BESS projects in California ISO's queue that are proposed within Solano County (see **Table 8-2**). The wait time for a project within California ISO's interconnection queue to reach commercial operation can vary from five to nine years, and only 19 percent of projects that enter the queue are eventually constructed (Rand et al. 2024; Luther 2025).

TABLE 8-2 PROPOSED BESS PROJECTS IN CALIFORNIA ISO'S GENERATION QUEUE

Project	Capacity	Projected On-Line Date	Point of Interconnection
Tolenas	400 MW	2/18/2031	Interconnect to Lambie Switching Station (owned by PG&E)
Brushy	400 MW	2/18/2031	Interconnect to Lambie Switching Station (owned by PG&E)
High Winds Storage	100 MW	3/16/2031	Interconnect to Birds Landing Substation (owned by PG&E)
Arges BESS	100 MW	6/18/2029	Interconnect to Vaca-Dixon Substation (owned by PG&E)
Corby 2	400 MW	3/16/2031	Interconnect to Vaca-Dixon Substation (owned by PG&E)

Source: California ISO 2026

The No Project Alternative would not meet the proposed project's primary objective to satisfy the LGIA requirements with PG&E and the ISO for the interconnection of a 300-MW BESS to the Vaca-Dixon Substation. However, as described above, other Solano

County BESS projects within California ISO's interconnection queue could be constructed that would support the proposed project's secondary objectives of improving grid stability and facilitating California's efforts to meet its renewable energy procurement targets.

Environmental Analysis

Air Quality

Under the No Project Alternative, the project site would likely remain in its current state of use as an agricultural land use. This alternative would avoid construction-related air emissions relating to construction equipment, vehicle trips of worker commute, equipment deliveries, and material hauling, and fugitive dust from soil disturbance activities. In addition, it would avoid emissions from mobile sources (vehicle trips), area sources, energy sources and off-road sources during project operation. Therefore, the No Project Alternative would avoid the air quality impacts attributed to the project.

Biological Resources

Under the No Project Alternative, the project site would likely remain in its current state of use as an agricultural land use. Wildlife species including nesting birds would be subject to periodic disturbance from farming practices including discing and harvesting. Similarly, sensitive species could be affected in the orchards from human disturbance and harvesting activities. This alternative would avoid construction related impacts on biological resources associated with the project. Therefore, the No Project Alternative would avoid the biological resources impacts attributed to the proposed project.

Climate Change and Greenhouse Gas Emissions

Under the No Project Alternative, the project site would likely remain in its current state of use, and none of the construction or operational greenhouse gas (GHG) emissions from the proposed project would be generated. The proposed project would have a net GHG reduction primarily due to the emissions avoided by using the BESS facility to replace natural gas power plants. The No Project Alternative would not have a net GHG reduction from the indirect effect of using the BESS facility. Therefore, while the No Project Alternative would avoid GHG emissions from construction and operation of the proposed project, this alternative would not create an overall benefit from a net reduction in GHG compared to the proposed project.

Cultural and Tribal Cultural Resources

Under the No Project Alternative, the project site would likely remain in its current agricultural land use. Since no new ground disturbing activities or construction would occur, this alternative would avoid potential impacts to cultural and tribal cultural resources.

Efficiency and Energy Resources

Under the No Project Alternative, the proposed BESS and associated facilities would not be constructed or operated; therefore, no energy would be consumed for construction or operation. However, the No Project Alternative would also not provide the operational benefits of energy storage, such as improved storage and utilization of electricity during periods of varying demand. Overall, the No Project Alternative would have no impact related to the wasteful or inefficient use of energy resources and would not conflict with state or local plans for energy efficiency or renewable energy.

Geology, Paleontology, and Minerals

Under the No Project Alternative, the project site would likely remain in its current state of agricultural land use. Since no new ground disturbing activities or construction would occur, this alternative would avoid potential impacts associated with geology, paleontology, and minerals, and have no impacts compared to the proposed project.

Hazards, Hazardous Materials, and Wildfire

Under the No Project Alternative, the project site would likely remain in its current agricultural land use. Since no new ground disturbing activities or construction would occur, this alternative would avoid potential impacts associated with hazards, hazardous materials/waste and wildfire.

Land Use and Agriculture

Under the No Project Alternative, there would be no conversion of Important Farmland to non-agricultural use. As future activities within the proposed project site would be subject to Solano County's permitting review process, CEC staff assumes that any development of the site under the No Project Alternative would be consistent with the site's Exclusive Agriculture (A-40) zoning designation. The County's permitting review process would also ensure that future agricultural use of the site would not preclude access to established uses surrounding the site. The No Project Alternative would have no impact to Agriculture and Land Use.

Noise and Vibration

Under the No Project Alternative, the project would not be constructed and there would be no impact on ambient noise levels in the project area. Both temporary loud noises and vibrations during construction and noise increases during project operation would be avoided. The No Project Alternative would have no noise and vibration impacts.

Public Health

Under the No Project Alternative, the project site would likely remain in its current state of use as an agricultural land use, and no construction or operational emissions would be generated. Therefore, the No Project Alternative would have substantially less public health impacts compared to the project.

Socioeconomics

Under the No Project Alternative, the project site would likely continue to remain under its current land use of agriculture and would not induce unplanned population growth or displace people or housing. Continued agricultural use would not include construction of or physically altered governmental facilities and would not impact the public services in Solano County, including fire and police protection, schools, parks and recreational facilities, or other public facilities.

Solid Waste Management

Under the No Project Alternative, the project site would likely remain in its current agricultural land use. The impacts from solid waste production from the proposed project would not occur and there would be no impact from the No Project Alternative.

Transmission Line Safety and Nuisance

Under the No Project Alternative, no construction or operational activities would occur. Therefore, there would be no impacts related to transmission line safety and nuisance compared to the proposed project.

Transportation

Under the No Project Alternative, the project site would likely remain in its current agricultural land use. There would be no construction phase and all the construction traffic associated with the proposed project (average workforce of approximately 80 workers over a 15-month construction period) would not occur.

Operations trip generation with the proposed project would be minimal. Therefore, the No Project Alternative would have similar traffic compared to the operations phase of the proposed project.

Visual Resources

Under the No Project Alternative, the proposed project would not be constructed, and the project site would likely remain in its current agricultural land use. Therefore, this alternative would avoid the significant visual resources impacts that would result from the proposed project's placement of industrial-appearing facilities at the BESS site and along the overhead portion of the gen-tie route (south of I-80).

Water Resources

Under the No Project Alternative, the proposed project site would likely remain in its current agricultural land use and not require mitigation of construction and operation impacts to water quality. As agriculture could utilitze the same or more water than the proposed project, impacts to water supply and groundwater recharge under the No Project Alternative would be similar to the proposed project (i.e., less than significant).

8.8.2 Lambie Industrial Park Alternative

Overview

The Solano County Board of Supervisors identified the Lambie Industrial Park site as a suitable site for a BESS facility during the County Board meetings held on August 12, 2025, and August 26, 2025 (SC 2025c). In their discussion of the Lambie Industrial Park, the County Board of Supervisors stated that the zoning for this alternative site (i.e., Manufacturing General) would be compatible with a BESS facility, and that this site would have a sufficient buffer from sensitive receptors (SC 2025c). Public comments submitted to the project docket have also identified Lambie Industrial Park as a possible site alternative (CEC 2024a).

Description

The applicant included information about Lambie Industrial Park in Data Response #4 (TT 2025m). Lambie Industrial Park is an approximately 1,461-acre property in unincorporated Solano County, bounded by Lambie Road, Goose Haven Road, and Creed Road. The property has a County Land Use designation of Industrial and is zoned Manufacturing General. The Lambie Industrial Park Alternative would be approximately 25 acres, which is the minimum acreage that the applicant requires for a 300-MW BESS facility. The 1,461-acre industrial park is crossed by a few underground natural gas pipelines. It is CEC staff's experience that a 25-acre BESS facility can be successfully sited to avoid any underground pipelines, and the precise location of the BESS facility within the 1,461-acre industrial park would depend on further underground utility mapping.

Construction of a BESS at this site would require a longer gen-tie to connect to the Vaca-Dixon Substation, which the applicant calculated to be at least 13 miles using a conservative point-to-point approach (TT 2025m). CEC staff assumes that a new gen-tie route from the Lambie Industrial Park to Vaca-Dixon Substation would follow an existing transmission ROW, such as the PG&E ROWs that cross the southwest corner of the Lambie Industrial Park. These transmission ROWs include a 500-kV line, which requires a ROW width of 200 to 250 feet, and a 230-kV line, which requires a ROW width of 125 to 175 feet. The transmission ROWs extend north and west from the Lambie Energy Center to Vaca-Dixon Substation for approximately 14 miles. This 14-mile segment of the transmission ROW crosses railroad tracks, agricultural land, and residential areas. Staff assumes that an additional ROW width of up to 175 feet would be required to site the 230-kv gen-tie adjacent to the existing PG&E ROWs.

Lambie Industrial Park is currently developed with a few industrial uses that include Goose Haven Energy Center, Lambie Energy Center, a fertilizer manufacturer, and a lumber company (Google Earth Pro 2025). A Delta Conservation Camp #8 is located immediately south of the site across Lambie Road and is used to house and train incarcerated fire crews for fire suppression.

Potential to Attain the Project Objectives

As stated in subsection 8.4, "Project Objectives," the applicant identified the following project objectives:

- Construct and operate a 300-MW BESS close to PG&E's Vaca-Dixon Substation in Solano County to meet contractual obligations to provide energy storage services.
- Develop a BESS that supports grid stability and helps prevent local and regional blackouts.
- Develop a BESS that supports the efficient use of renewable energy and California's RPS goals.

The applicant identified the following as minimum site requirements to meet the project's objectives (TT 2024a, Section 2.3.1):

- Parcel size: A parcel must be approximately 25 acres in size to allow design flexibility for a 300-MW project that includes batteries, inverters, transformers, project substation, stormwater control, and fencing.
- Gen-tie: The distance and corresponding gen-tie length must be minimized to reduce impacts (e.g., biological resources, cultural resources, proximity to sensitive receptors), energy loss, and costs associated with gen-tie construction and operation. A site no more than 1 to 2 miles from the interconnection substation is the most desirable considering the tradeoff of energy losses and economic losses.

The Lambie Industrial Park site would meet the applicant's stated minimum size requirements to support a 300-MW project and its ancillary facilities, and connection to the Vaca-Dixon Substation per the LGIA. While the applicant has stated that a shorter gen-tie line (i.e., no more than 2 miles) would be preferred, CEC staff notes that the gen-tie length may exceed 2 miles if it would allow for development of a site that has fewer impacts to sensitive resources such as residences, schools, recreation areas, biological resources, and cultural resources. As all other components of the proposed BESS facility would remain the same, the Lambie Industrial Park Alternative would attain the project objectives of developing a BESS that supports grid stability and the efficient use of renewable energy to meet California's RPS goals.

Potential Feasibility Issues

The gen-tie line for this alternative would extend approximately 14 miles across railroad tracks, agricultural land, and residential areas. While a longer gen-tie route would not render the alternative infeasible, it could pose additional challenges such as potential biological or cultural resource impacts, impacts to agricultural land, securing site control over the additional parcels, and a longer construction period. However, the CEC has approved other energy projects with similar or longer gen-tie line lengths that travel through mixed-use areas that include agricultural, industrial, and residential uses.

Environmental Analysis

Air Quality

Under the Lambie Industrial Park Alternative, while the BESS facility footprint would be contained within the minimum 25-acre requirement, the alternative necessitates the construction of an approximately 14-mile gen-tie line to the Vaca-Dixon Substation. Because this extended gen-tie route traverses agricultural, residential, and railroad lands, significantly more ground-disturbing activities, heavy equipment use, and vehicle miles traveled would occur along the corridor. In addition, this alternative site is located on rolling hills that would require more grading than the proposed project site. Therefore, this alternative would increase potential impacts related to fugitive dust and construction equipment exhaust compared to the proposed project's shorter interconnection route.

Under this alternative, routine operation and maintenance activities for the BESS would be localized to the 25-acre site, which is consistent with the surrounding industrial uses. However, the extended 14-mile transmission right-of-way would require additional periodic inspection and maintenance. As a result, routine operational air quality impacts would be slightly greater compared to a proposed project with a shorter gen-tie line, though overall operational emissions would remain relatively minor.

Under this alternative, the increased distance from residences would reduce potential air quality impacts from a BESS fire or thermal runaway event.

Construction-related emissions would be greater under the Lambie Industrial Park Alternative compared to the proposed project, however, with implementation of conditions of certification (COCs) and mitigation measures (MMs), air quality impacts under the Lambie Industrial Park Alternative would remain similar to the proposed project (i.e., less than significant with mitigation).

Biological Resources

Under the Lambie Industrial Park Alternative, while the BESS facility footprint would be contained within the minimum 25-acre requirement, the alternative necessitates the construction of an approximately 14-mile gen-tie line to the Vaca-Dixon Substation. Because this extended gen-tie route traverses agricultural, residential, and railroad lands, significantly more ground-disturbing activities, heavy equipment use, and vehicle travel would occur along the corridor. In addition, this alternative site is located on natural lands and the gen-tie would cross rolling hills that would require more grading than the proposed project site. Construction of this alternative would increase potential impacts to a variety of sensitive plants and wildlife that may occur on the Lambie Industrial Park site and along the gen-tie line. The increased gen-tie line would also increase the risk of avian collisions with the conductors or shield wires. Therefore, this alternative would increase potential impacts related to biological resources compared to the proposed project.

CEC staff would recommend the same COCs for the proposed project be adopted if this alternative is selected. However, it is likely that species not included in the staff assessment could occur in these areas and additional studies would be required to verify baseline biological resource conditions. This alternative would require species-specific mitigation to reduce potentially significant impacts associated with the project site and gen-tie route.

Climate Change and Greenhouse Gas Emissions

Under the Lambie Industrial Park Alternative, while the BESS facility footprint would be contained within the minimum 25-acre requirement, the alternative necessitates the construction of an approximately 14-mile gen-tie line to the Vaca-Dixon Substation. Because this extended gen-tie route traverses agricultural, residential, and railroad lands, significantly more ground-disturbing activities, heavy equipment use, and vehicle miles traveled would occur along the corridor. In addition, this alternative site is located on rolling hills that would require more grading than the proposed project site. Therefore, construction of this alternative would increase greenhouse gas emissions compared to the proposed project's shorter interconnection route.

Under this alternative, routine operation and maintenance activities for the BESS would be localized to the 25-acre site, which is consistent with the surrounding industrial uses. However, the extended 14-mile transmission right-of-way would require additional periodic inspection and maintenance. As a result, routine operational greenhouse gas emissions would be slightly greater compared to a proposed project with a shorter gen-tie line, though overall operational emissions would remain relatively minor.

The Lambie Industrial Park Alternative would provide overall beneficial effects of displacing GHG from natural gas-fired power plants used for energy generation. Similar to the proposed project, impacts to greenhouse gas emissions would be less than significant.

Cultural and Tribal Cultural Resources

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site, located approximately 14 miles south of the proposed project and requiring a new gen-tie through agricultural and rural residential areas. Impacts to cultural and tribal cultural resources are unknown and would require new studies. The new studies would include a records and literature search, archaeological and built-environment surveys, and updated Native American engagement. Given the rural character of the Lambie Industrial Park Alternative and its substantially longer gen-tie, it is reasonable to expect a similar severity of cultural and tribal cultural resource impacts to result as compared to the proposed project.

Efficiency and Energy Resources

Under the Lambie Industrial Park Alternative, the BESS facility would be constructed and operated similar to the proposed project; therefore, energy would be consumed

during construction and operation similar to the proposed project. The same type of BESS would be used, and the change in project location would not affect the efficiency characteristics of the BESS during charging and discharging. Although construction of the longer gen-tie could increase the extent of construction activities compared to the proposed project, energy resources would be used efficiently and would not result in wasteful or unnecessary consumption of energy when standard construction equipment, techniques, and best management practices are implemented. As a result, the Lambie Industrial Park Alternative would not result in wasteful, inefficient, or unnecessary consumption of energy resources and would not conflict with state or local plans for renewable energy or energy efficiency.

Geology, Paleontology, and Minerals

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site that would be about 14 miles south of the proposed project site and require a new gen-tie line through agricultural and rural residential areas. Impacts related to geology, paleontology, and minerals are unknown and would require new evaluations, including a preliminary site-specific geohazard and geotechnical investigation. Initial evaluation of the surface geology at the Lambie Industrial Park using DOC and United States Geological Survey sources indicates the site is underlain by a Pleistocene sedimentary rock formation, which is slightly older and presumably more consolidated than the Latest Pleistocene Alluvial Fan Deposits at the project site. Due to the similarities in geology between the sites for the Lambie Industrial Park Alternative and the proposed project, staff expects similar potential impacts related to geology, paleontology, and minerals as the proposed project.

CEC staff would recommend the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, geology, paleontology, and mineral impacts under the Lambie Industrial Park Alternative would be mitigated to less than significant.

Hazards, Hazardous Materials, and Wildfire

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site approximately 14 miles south of the proposed project, requiring a new gen-tie through agricultural, industrial, and rural residential areas. Construction and operation of the BESS facility would involve the same types and quantities of hazardous materials as the proposed project. All hazards, hazardous materials, wildfire, and worker-safety-related COCs identified for the proposed project would be recommended for this alternative.

Construction would involve the routine transport, use, and disposal of hazardous materials similar to the proposed project. With implementation of all hazards, hazardous materials, wildfire, and worker-safety-related COCs for the proposed project, these impacts would be less than significant, similar to the proposed project. Construction of the 14-mile gen-tie (compared to approximately 1.1 miles for the proposed project) would increase the geographic extent of ground disturbance and the likelihood of

encountering unknown subsurface contamination. With implementation of all hazards, hazardous materials, wildfire, and worker-safety-related COCs, impacts related to encountering unknown contamination during ground disturbing activities would be less than significant, similar to the proposed project. Operation would involve the routine transport, use, and disposal of limited quantities of hazardous materials associated with equipment maintenance and battery system operation, as described for the proposed project. With implementation of all hazards, hazardous materials, wildfire, and worker-safety-related COCs for the proposed project, routine operational hazardous materials impacts would be less than significant, similar to the proposed project.

No schools, hospitals, daycare facilities, or long-term care facilities are located within 1 mile of the Lambie site.

There are no public or private airports within two miles of the site; the nearest airport is the Rio Vista Municipal Airport, approximately 8 miles southeast, and Travis Air Force Base is approximately 4.7 miles northwest. The Lambie site is within Zone C of the Travis Air Force Base Land Use Compatibility Plan (SC 2024), compared to Zone D for the proposed project. Zone C limits land uses that could expose people to aircraft overflight or accident risk; a BESS facility, which is minimally staffed and not open to the public, would not constitute such a use. The project would not include any structures exceeding the applicable height limits in Zone C, consistent with the proposed project's analysis under Zone D. Airport-related impacts would be less than significant, similar to the proposed project.

Review of the State Water Resources Control Board (SWRCB) GeoTracker and Department of Toxic Substances Control (DTSC) EnviroStar databases for the Lambie site vicinity identified two nearby cleanup sites[6] that have received regulatory case closure. In addition, the Travis Air Force Base Nike 33 Formerly Used Defense Site (FUDS Site #J09CA0975), located on the adjacent Delta Conservation Camp #8 parcel, was evaluated by the U.S. Army Corps of Engineers; DTSC concurred with a Finding of No Department of Defense Actions Indicated (NDAI) in 2015. No known active sources of contamination have been identified that would be expected to affect the Lambie site.

For the reasons described for the project, use of the Lambie site would have a less than significant impact on any adopted emergency response plans or emergency evacuation plans. Construction and operation activities at the Lambie site would not alter or impair any of the existing road networks. Any temporary road closure would be coordinated with Solano County to ensure that the temporary road closure would not impair emergency response or evacuation in the area.

6 Two formally closed cleanup cases were identified: (1) the EB Stone fertilizer facility at 6111 Lambie Road (approximately 0.8 miles west), closed by the Regional Water Quality Control Board in 2017 following a soil and groundwater investigation that detected no chemicals of concern above applicable thresholds; and (2) a leaking underground storage tank (LUST) involving gasoline at 6246 Lambie Road (approximately 0.1 miles west), formally closed August 16, 1999.

Similar to the project site, the Lambie site is in an area of predominantly agricultural and rural land uses with no nearby forested areas and there would be no increase in fire hazard severity. A review of the CAL FIRE Fire and Resource Assessment Program (FRAP) database indicates no historic wildfires within 5 miles of the Lambie site, indicating low baseline wildfire risk. Although portions of the Lambie site and gen-tie corridor may be within higher Fire Hazard Severity Zones compared to the proposed project, implementation of hazards, hazardous materials, and wildfire COCs for the proposed project would reduce wildfire risk to less than significant levels for the Lambie Industrial Park Alternative.

Delta Conservation Camp #8, a joint California Department of Corrections and Rehabilitation/CAL FIRE facility, is located immediately south of the site across Lambie Road and is used to house and train incarcerated fire crews for fire suppression. The proximity of Camp #8 represents a nearby sensitive receptor that could be exposed to smoke or toxic gases in the unlikely event of a BESS thermal runaway or fire. As with the proposed project, the potential for thermal runaway and fire would be mitigated by all hazards, hazardous materials, wildfire, and worker-safety-related COCs for the proposed project. Further, the Lambie Industrial Park encompasses approximately 1,461 acres, providing siting flexibility to maximize separation between battery enclosures and Camp #8. The Fire Prevention Plan required by worker-safety COCs for the proposed project would mitigate impacts related to fire protection and potential BESS fire-related incidents. With implementation of these COCs, upset and accident condition impacts would be less than significant, similar to the proposed project.

As described for the project, the Lambie site and associated gen-tie are not located in a State Responsibility Area and not classified as a very high fire hazard severity zone (FHSZ) and would not substantially impair an adopted emergency response plan or emergency evacuation plan. The project owner would implement construction and operation fire prevention plans and vegetation management inspections to avoid exacerbating wildfire risk. As described for the project, the topography of the Lambie site is relatively flat and does not contain any significant slopes that would expose the project site and surrounding property to runoff or post-fire slope instability. With implementation of all hazards, hazardous materials, wildfire, and worker-safety-related COCs for the proposed project, wildfire impacts would be less than significant similar to the proposed project.

Land Use and Agriculture

The Lambie Industrial Park has a County zoning of Manufacturing General, which is intended for industrial operations that require a buffer from residential and agricultural uses. Constructing a BESS facility at this alternative site would be consistent with County Ordinance No. ZT-25-02 that identifies BESS as an allowable use within Manufacturing and Industrial zones. The Lambie Industrial Park does not contain Important Farmland, and developing a BESS facility at the site would not convert Farmland to non-agricultural use nor would it conflict with agricultural zoning.

The alternative 14-mile gen-tie line from the Lambie Industrial Park to Vaca-Dixon Substation would traverse agricultural lands containing Important Farmland as well as a rural residential community. The degree to which land uses would be impacted from construction of the gen-tie would depend on the location of the towers and the extent of ground disturbance required for construction. However, without mitigation specific to this alternative that addresses preclusion of residential and agricultural uses along the gen-tie and the conversion of Important Farmland, land use impacts associated with the gen-tie route would be potentially significant. Alternative-specific mitigation would be required to reduce the impacts associated with Farmland conversion and preclusion of land uses along the 14-mile gen-tie to a less than significant level.

Noise and Vibration

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site, located approximately 14 miles south of the proposed project and requiring a new gen-tie through agricultural and rural residential areas. Noise from construction and operation of the BESS facility could affect nearby structures that appear to be non-residential, with property boundaries located approximately 100 feet south of the site beyond Lambie Road, and structures located approximately 320 feet from the alternative project site boundary. This alternative would result in similar on-site construction noise levels to the proposed project, which would be less than significant with mitigation.

Because the gen-tie would follow existing transmission corridors, construction activities would occur in areas already influenced by similar infrastructure. Construction activities occurring in close proximity to nearby sensitive receptors along the route would be temporary and intermittent, as work progresses from one tower location to the next, and would require similar mitigation measures as those identified for the proposed project.

Therefore, construction noise and vibration impacts would be less than significant with mitigation incorporated. Operational noise and vibration impacts would also be similar to the proposed project and remain less than significant.

Staff recommends that all COCs identified for the proposed project be applied to this alternative. With implementation of these COCs, all impacts would be less than significant.

Public Health

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site, located approximately 14 miles south of the proposed project. The construction of the extended gen-tie line would result in increased construction activity, including ground-disturbing activities and heavy equipment use and associated diesel particulate matter (DPM) emissions. In addition, this alternative site is located on rolling hills that would require more grading than the proposed project site. These factors could increase DPM emissions compared to a project with a shorter gen-tie route.

Under this alternative, routine operation and maintenance activities for the BESS would be localized to the 25-acre site, which is consistent with the surrounding industrial uses. However, the extended 14-mile transmission right-of-way would require additional periodic inspection and maintenance. As a result, DPM emissions from routine operational activities would be slightly greater compared to a proposed project with a shorter gen-tie line, although overall health risks would remain relatively minor.

Under this alternative, the increased distance from residences would reduce potential exposure to toxic air contaminant emissions from a BESS fire or thermal runaway event.

With implementation of COCs, public health impacts under the Lambie Industrial Park Alternative would remain similar to the proposed project (i.e., less than significant with mitigation).

Socioeconomics

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site approximately 14 miles south of the proposed project in unincorporated Solano County. This alternative would require a longer, approximately 14-mile gen-tie. Socioeconomic impacts under this alternative would be similar to the proposed project. For the construction phase, there may be slightly more workers for a longer period of time due to the longer time needed to construct the 14-mile gen-tie. As discussed for the proposed project, a local workforce would likely be available to construct the alternative, and therefore, construction would not directly or indirectly induce population growth. Impacts from construction of the alternative would remain less than significant.

The operations phase under this alternative would be the same as the proposed project, and therefore would have similar effects on public services. With no displacement of existing people or housing, and no expected population growth, there would be no expected changes in demand for police protection, schools, parks, or recreational facilities that would cause new or physically altered facilities. As such, the Lambie Industrial Park Alternative would not create an impact related to housing or public services and facilities. Given the small number of employees occasionally on site, the impacts resulting from an increased need in fire and police services would continue to be less than significant.

Solid Waste Management

Under the Lambie Park Alternative, the gen-tie line would be approximately 12 miles longer than the proposed project and would therefore produce more solid waste during project construction. The production of solid waste during the operation of the project alternative would be similar to the proposed project. The proposed project would produce approximately 5000 cubic yards of solid waste over fourteen months which is 0.005 percent of the remaining capacity of the local landfills. Therefore, even a significant increase in solid waste production by the Lambie Park Alternative's gen-tie

line would not exceed local landfill capacity and would have a less than significant impact.

Transmission Line Safety and Nuisance

Construction of a BESS at this site would require a longer gen-tie to connect to Vaca-Dixon Substation. The approximately 14-mile transmission right-of-way would require additional periodic inspection and maintenance. However, with adherence to utility clearance standards, Cal/OSHA safety protocols, similar COCs, and site-specific design measures similar to the proposed project site, impacts related to transmission line safety and nuisance would be less than significant.

Transportation

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site, located approximately 14 miles south of the proposed project. Regional access would still be provided primarily via I-80, but the Lambie site is a significantly greater driving distance from I-80 than the proposed project site (13 to 17 miles vs 0.5 miles).

Given the greater driving distance to the Lambie Industrial Park than the proposed project, this alternative would increase the vehicle miles traveled (VMT) on local roads compared to the proposed project. However, the additional VMT for the Lambie Industrial Park Alternative would not exceed the significance threshold used to evaluate the proposed project, and the overall VMT impact under this alternative would remain less than significant. Construction and operations traffic, plus site access impacts would be similar to the proposed project and remain less than significant with the COCs for transportation implemented at the Lambie Industrial Park Alternative site.

Visual Resources

Under the Lambie Industrial Park Alternative, the project would be constructed at an alternative site, located approximately 14 miles south of the proposed project and requiring a new gen-tie through agricultural and rural residential areas. Given that the alternative site is predominantly characterized as a grassland landscape, the resulting visual resources impacts associated with the BESS site would be similar to those of the proposed project (e.g., substantial degradation of the existing visual character or quality of the public views of the site), though the number of public viewers would be fewer at the alternative site. However, it is anticipated that the visual impacts of the alternative 14-mile gen-tie would be substantially greater (than for the proposed project) as the line passes through more extensive rural residential areas. Overall, it is likely that the total visual impact of the alternative would be at least similar to the proposed project if not greater.

Water Resources

Under the Lambie Park Alternative, the project would be built on 25 acres, which is notably smaller than the 40.3 acre parcel of the proposed project and would have less

ground disturbance than for the proposed BESS site. However, the alternative gen-tie line would be 12 miles longer, resulting in greater ground disturbance for that portion of the project. Water quality impacts would be mitigated with implementation of the Construction General Permit and the COCs for Water Resources, in the same way as the proposed project. Water use for the alternative would also remain similar to the proposed project during contstruction and operation. Impacts to Water Resources would remain less than significant with mitigation.

8.8.3 Central Overhead Gen-Tie Route Alternative

Overview

The project's Opt-In application includes information for a Central Overhead Gen-Tie Route Alternative that would be constructed entirely on overhead structures. This alternative gen-tie route is illustrated in the project's application Section 5.4, Figure 5-2 (TT 2024c). According to the applicant, the underground portion of the proposed gen-tie alignment is intended to accommodate the owner of APN 0141010030, who does not want an overhead line routed through the property (TT 2024c). The following section evaluates a gen-tie alternative that would avoid construction of an underground duct bank.

Description

The Central Overhead gen-tie route would be an overhead-only route that would follow the same alignment as the proposed project route and would be approximately 1.1 miles in length. This route would exit the project substation and travel west-northwest across Kilkenny Road before paralleling Kilkenny Road on the north side of the Solano Irrigation District (SID) canal. After the canal crosses under Kilkenny Road, the route would turn north and parallel the 500-kV transmission line within a parcel owned by the applicant, cross over I-80, and interconnect at Vaca-Dixon Substation. Similar to the proposed project, this alternative gen-tie route would pass through two parcels that are not owned by the applicant or PG&E. This alternative would eliminate the installation of a concrete duct bank as well as the transition poles that would be required at either end of the proposed project's underground segment. Approximately three new overhead transmission poles would be required for this gen-tie alternative.

Potential to Attain the Project Objectives

This alternative would not change the location or size of the proposed BESS facility and would only involve a change in the proposed construction of the gen-tie route from underground to overhead. As such, the alternative would meet the following project objectives:

- Construct and operate a 300-MW BESS close to PG&E's Vaca-Dixon Substation in Solano County to meet contractual obligations to provide energy storage services.
- Develop a BESS that supports grid stability and helps prevent local and regional blackouts.

- Develop a BESS that supports the efficient use of renewable energy and California's RPS goals.

Potential Feasibility Issues

This alternative's proposed construction of an overhead gen-tie route is technically feasible. However, in order to construct this alternative, the applicant would require an easement from SID to cross the irrigation canal north of Kilkenny Road. In the project application, the applicant acknowledges that "…SID has not indicated that they will provide the easement necessary to cross the gen-tie line under the existing SID canal located adjacent to the north side of Kilkenny Road. The Applicant team is continuing attempts to coordinate with SID regarding the easement agreements" (TT 2024a). The issuance of an easement to cross SID facilities is outside of the authority of the CEC (TT 2026h). Consequently, the feasibility of this alternative would depend on SID's authorization of the gen-tie route's canal crossings.

Environmental Analysis

Air Quality

Under the Central Overhead Gen-Tie Route Alternative, while the overall 1.1-mile gen-tie alignment would remain the same as the proposed project, the alternative eliminates the underground concrete duct bank segment and transition poles in favor of an entirely overhead route utilizing approximately three new transmission poles. Because avoiding trenching for underground lines requires less extensive ground-disturbing activities and heavy equipment use, fewer overall equipment operating hours and soil excavation would occur along the corridor. Therefore, this would reduce emissions related to fugitive dust and construction equipment exhaust compared to the proposed project involving an underground segment.

Under this alternative, routine operation and maintenance activities for the BESS and the gen-tie line would be similar to the proposed project. The use of an entirely overhead line instead of a partially underground route would still require standard periodic visual inspections and maintenance, which do not generate substantial emissions. As a result, routine operational air quality impacts would be equivalent to the proposed project, and overall operational emissions would remain relatively minor.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With the implementation of these COCs, air quality impacts under the Central Overhead Gen-Tie Route Alternative would remain similar to the proposed project (i.e., less than significant with mitigation).

Biological Resources

Under the Central Overhead Gen-Tie Route Alternative, while the overall 1.1-mile gen-tie alignment would remain the same as the proposed project, the alternative eliminates the underground concrete duct bank segment and transition poles in favor of an entirely overhead route utilizing approximately three new transmission poles. Because

avoiding trenching for underground lines requires less extensive ground-disturbing activities and heavy equipment use, fewer overall equipment operating hours and soil excavation would occur along the corridor. Therefore, this would reduce potential impacts to biological resources from exposure to fugitive dust and construction equipment compared to the proposed project involving an underground segment. This alternative would also reduce the potential for frac-outs from occurring when boring under the existing SID canal. The addition of new lines would slightly increase the risk of avian collisions compared to the proposed project. Therefore, impacts to biological resources would be similar but slightly higher for birds and bats who may collide with new transmission line facilities.

Under this alternative, routine operation and maintenance activities for the BESS and the gen-tie line would be similar to the proposed project. The use of an entirely overhead line instead of a partially underground route would still require standard periodic visual inspections and maintenance, which would have minimal impacts on biological resources. As a result, routine operational air quality impacts would be equivalent to the proposed project, and overall operational emissions would remain relatively minor.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. In addition, staff would recommend that all overhead structures be constructed in compliance with Avian Power Line Interaction Committee standards, which include measures to reduce potential impacts to birds from collision and electrocution. With the implementation of these COCs, impacts on biological resources under the Central Overhead Gen-Tie Route Alternative would be less than significant.

Climate Change and Greenhouse Gas Emissions

Under the Central Overhead Gen-Tie Route Alternative, the overall 1.1-mile gen-tie alignment would remain the same as the proposed project. Since this alternative would avoid trenching for underground lines and would require less extensive ground-disturbing activities and heavy equipment use, fewer overall equipment operating hours and soil excavation would occur along the corridor. Therefore, this would reduce potential greenhouse gas emissions related to construction equipment compared to the proposed project.

Under this alternative, routine operation and maintenance activities for the BESS and the gen-tie line would be similar to the proposed project. The use of an entirely overhead line instead of a partially underground route would not generate substantial emissions. As a result, routine operational greenhouse gas emissions would be equivalent to the proposed project, and overall operational emissions would remain less than significant.

The Central Overhead Gen-Tie Route Alternative would have similar impacts related to climate change and greenhouse gas emissions and would conform with applicable laws, ordinances, regulations, and standards. Staff would not recommend any conditions of

certification related to climate change and greenhouse gas emissions. Greenhouse gas impacts under the Central Overhead Gen-Tie Route Alternative would be less than significant.

Cultural and Tribal Cultural Resources

The Central Overhead gen-tie route would be an overhead-only route that would follow the same alignment as the proposed project route and would be approximately 1.1 miles in length. This alternative would reduce the potential to affect unknown buried cultural and tribal cultural resources; however, it could cause additional visual effects to the CRHR-eligible Kilkenny residence which would require additional mitigation to reduce the effects to less than significant.

Efficiency and Energy Resources

Under the Central Overhead Gen-Tie Route Alternative, the BESS facility would be constructed and operated similar to the proposed project; therefore, energy would be consumed during construction and operation similar to the proposed project. The same type of BESS would be used, and the change in gen-tie configuration would not affect the efficiency characteristics of the BESS during charging and discharging. Elimination of trenching and installation of an underground duct bank could reduce the extent of construction activities compared to the proposed project. Moreover, energy resources would be used efficiently and would not result in wasteful or unnecessary consumption of energy when standard construction equipment, techniques, and best management practices are implemented. As a result, the Central Overhead Gen-Tie Route Alternative would not result in wasteful, inefficient, or unnecessary consumption of energy resources and would not conflict with state or local plans for renewable energy or energy efficiency.

Geology, Paleontology, and Minerals

The Central Overhead Gen-Tie Route Alternative would be an overhead-only route that would follow the same alignment as the proposed project route and would be approximately 1.1 miles in length. Under this alternative, slightly fewer ground disturbing and construction activities would occur. This alternative would have similar potential impacts related to geology, paleontology, and minerals as the proposed project.

Staff recommends the same COCs for the proposed project be adopted if this alternative is selected. With implementation of these COCs, geology, paleontology, and mineral impacts under the Central Overhead Gen-Tie Route Alternative would be mitigated to less than significant.

Hazards, Hazardous Materials, and Wildfire

The Central Overhead gen-tie route would be an overhead-only route that would follow the same alignment as the proposed project route and would be approximately 1.1 miles in length.

This alternative would result in similar on-site construction that would include hazardous material use and storage, which would be less than significant with mitigation. CEC staff reviewed the SWRCB Geotracker (SWRCB 2025) and the DTSC EnviroStar (DTSC 2025) websites, which did not identify any known hazardous material or environmental contamination sites within or close enough to affect the project site or the Central Overhead gen-tie route.

Similar to the proposed project, there would be potential to encounter contaminated soils during construction. Implementation of the same COCs for the proposed project would reduce construction impacts along the Central Overhead Gen-tie route.

There would be no increase in fire hazard severity. The Central Overhead gen-tie route would be within an unzoned Local Responsibility Area (less than moderate fire hazard severity). The wildfire impact would be less than significant.

CEC staff recommends that all COCs identified for the proposed project be applied to this alternative. With implementation of these COCs, all hazards, hazardous materials and wildfire impacts would be less than significant.

Land Use and Agriculture

As the Central Overhead Gen-Tie Route Alternative would follow the same gen-tie route as the proposed project, there would be no change in the specific parcels or land uses that would be affected during project construction and operation. Impacts associated with Farmland conversion and agricultural zoning would remain significant but mitigable with implementation of agricultural COCs identified for the proposed project. Potential access disruptions for residential land uses during gen-tie construction along Kilkenny Road would also remain less than significant with implementation of transportation COCs identified for the proposed project. This alternative would not avoid or reduce any of the proposed project's land use impacts, nor would it increase the severity of any land use impact compared with the proposed project.

Noise and Vibration

Under the Central Overhead Gen-tie Route Alternative, construction of the alternative would be similar to the proposed project, with the exception of the gen-tie route being constructed overhead instead of underground. This alternative would result in similar construction noise levels and impacts would be less than significant with mitigation.

Construction activities occurring in close proximity to nearby sensitive receptors along the gen-tie route would be temporary and intermittent, as work progresses from one tower location to the next, and would require similar mitigation measures as those identified for the proposed project. Thus, construction-related noise impacts would be less than significant with mitigation.

Construction-related vibration impacts would be similar to the proposed project and remain less than significant. Operational noise and vibration impacts would also be similar to the proposed project and remain less than significant.

Staff recommends that all COCs identified for the proposed project be applied to this alternative. With implementation of these COCs, all noise and vibration impacts would be less than significant.

Public Health

Under the Central Overhead Gen-Tie Route Alternative, while the overall 1.1-mile gen-tie alignment would remain the same as the proposed project, the alternative eliminates the underground concrete duct bank segment and transition poles in favor of an entirely overhead route utilizing approximately three new transmission poles. Because avoiding trenching for underground lines requires less extensive ground-disturbing activities and heavy equipment use, fewer overall equipment operating hours and soil excavation would occur along the corridor. Therefore, potential exposure to construction-related emissions could be reduced, which may reduce potential health risks compared to the proposed project's construction of an underground segment.

Under this alternative, routine operation and maintenance activities for the BESS and the gen-tie line would be similar to the proposed project. The use of an entirely overhead line instead of a partially underground route would still require standard periodic visual inspections and maintenance, which do not generate substantial emissions. As a result, routine operational public health impacts would be similar to the proposed project.

Staff recommend the same COCs for the proposed project be adopted if this alternative is selected. With the implementation of these COCs, public health impacts under the Central Overhead Gen-Tie Route Alternative would be less than significant.

Socioeconomics

Under the Central Overhead Gen-Tie Route Alternative, the gen-tie route would be an overhead-only route that would follow the same alignment as the proposed project route at approximately 1.1 miles in length. Socioeconomics-related impacts under this alternative would be similar to the proposed project. As discussed for the proposed project, a local workforce would likely be available to construct the alternative, and therefore, construction would not directly or indirectly induce population growth. Impacts from construction of the alternative would remain less than significant.

The operations phase under this alternative would be the same as the proposed project, and therefore would have similar effects on public services. There would be no displacement of existing people or housing, and no expected population growth. Therefore, there would be no expected changes in demand for, or use of, police protection, schools, parks, or recreational facilities that would cause new or physically altered facilities. As such, the Lambie Industrial Park Alternative would not create an

impact related to housing or public services and facilities. Given the small number of employees occasionally on site, the impacts resulting from an increased need in fire and police services would continue to be less than significant.

Solid Waste Management

Under the Central Overhead Gen-Tie Route Alternative, solid waste production would remain similar to the proposed project for construction and operation. Therefore, solid waste impacts would remain less than significant.

Transmission Line Safety and Nuisance

The Central Overhead gen-tie route would be an overhead-only route that would follow the same alignment as the proposed project route and would be approximately 1.1 miles in length. With adherence to utility clearance standards, Cal/OSHA safety protocols, similar COCs, and site-specific design measures similar to the proposed project site, impacts related to transmission line safety and nuisance would be less than significant.

Transportation

Construction and operations traffic, plus site access impacts would be the same as the proposed project and remain less than significant with the implementation of the COCs for transportation.

Visual Resources

The Central Overhead Gen-Tie Route Alternative would be an overhead-only route that would follow the same alignment as the proposed project route and would be approximately 1.1 miles in length. This alternative would replace the proposed underground segment along the north side of Kilkenny Road with an alternative overhead segment. Under this alternative, visual impacts would be similar though slightly greater compared to the proposed project. Although this alternative would eliminate the two more structurally complex transition structures associated with the proposed underground segment (a visual benefit), the additional overhead transmission poles and conductors of the alternative would result in a net increase in the visual impact along Kilkenny Road. Also, the alternative overhead segment would result in adverse visual impacts on views from the CRHR-eligible Kilkenny residence, which would require additional mitigation to reduce the impact to less than significant.

Water Resources

Under the Central Overhead Gen-Tie Route Alternative, impacts to water quality and consumption would remain similar to the proposed project. Water quality impacts would be mitigated with implementation of the Construction General Permit and the COCs for Water Resources, in the same way as the proposed project. Water use for the alternative would also remain similar to the proposed project. Therefore, impacts to water resources would remain less than significant with mitigation.

8.9 Environmentally Superior Alternative

In accordance with CEQA requirements, an "environmentally superior alternative" must be identified among the alternatives analyzed in an EIR. The environmentally superior alternative is the alternative found to have an overall environmental advantage compared to the other alternatives based on the impact analysis in the EIR. If the environmentally superior alternative is the No Project alternative, CEQA Guidelines Section 15126.6(e)(2) requires the EIR to identify an environmentally superior alternative from among the other alternatives.

In evaluating the anticipated environmental impacts of the proposed project and alternatives, CEC staff has determined that the No Project Alternative would have the least environmental effects. However, the No Project Alternative would not meet the objectives of the project to develop a BESS that supports California's RPS goals and improves grid stability. Therefore, CEC staff has reviewed the action alternatives to identify an environmentally superior alternative.

An environmentally superior alternative to the proposed project would avoid or substantially lessen any of the project's significant effects. As discussed in Staff Assessment **Sections 5.1** through **5.16**, with the exception of Visual Resources, all other potentially significant effects of the proposed project would be reduced to a less-than-significant level through the implementation of project-specific conditions of certification and recommended mitigation measures. **Section 5.15, Visual Resources**, describes the significant degradation of the existing visual character of the project site due to the creation of a new industrial footprint within a rural landscape, which could not be mitigated to a less-than-significant level.

The Lambie Industrial Park Alternative was developed in response to comments from the Solano County Board of Supervisors and comments from the public requesting the consideration of this alternative site. The land use and zoning designations for this alternative site are compatible with a BESS facility (i.e., Industrial/Manufacturing General), and the site would be located at a greater distance from sensitive receptors than the proposed project site. Construction of the BESS facility at the Lambie Industrial Park would also avoid the conversion of Important Farmland associated with the proposed project. However, construction of a BESS facility at the Lambie Industrial Park would require an approximately 14-mile, 230-kV, gen-tie to connect the BESS facility to Vaca-Dixon Substation.

Given that this alternative is evaluated in less detail than the proposed project, CEC staff made necessary assumptions regarding the construction activity required for the alternative site and gen-tie route. Staff noted that the alternative site is located on rolling hills and would require more grading than the proposed project site. Staff also noted that the 14-mile gen-tie route would be sited across active agriculture and DOC-designated Important Farmland, residential areas, and natural habitat. Staff concluded that the potential impacts from construction and operation of the BESS facility at the Lambie Industrial Park and the 14-mile gen-tie would be of a similar level of severity as

the proposed project's impacts (i.e., significant but mitigable), but would extend over a larger geographic area and affect a greater population (including more sensitive receptors) given the length of the alternative gen-tie. Similar to the proposed project, this alternative would require site-specific mitigation to reduce impacts to less-than-significant levels. Visual Resource impacts associated with construction and operation of the overhead Lambie 14-mile gen-tie across agricultural lands and residential areas are anticipated to remain significant and extend over a longer gen-tie route.

The Central Overhead Gen-Tie Route Alternative was developed to evaluate an alternative construction method (i.e., overhead instead of underground) for the proposed project gen-tie line. The alternative would eliminate the project's installation of a 2,300-foot-long concrete duct bank as well as the transition poles that would be required at either end of the proposed project's underground segment. Staff noted that this alternative would require less extensive ground-disturbing activities for a segment of the proposed gen-tie line. However, overall impacts associated with this alternative would be of a similar level of severity as the proposed project's impacts (i.e., significant but mitigable), and the conditions of certification and mitigation measures developed for the proposed project would be applicable to this alternative. Visual Resource impacts associated with construction of the BESS facility are anticipated to remain significant.

Neither of the action alternatives would avoid or substantially lessen any of the project's significant effects. Therefore, staff has determined that given the detailed analysis of project-specific impacts presented in this Staff Assessment, and the conditions of certification and mitigation measures that have been tailored for the proposed project to reduce potential impacts to a less-than-significant level, the proposed project is the CEQA Environmentally Superior Alternative among the action alternatives.

TABLE 8-3 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED CORBY BESS PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts	Proposed Project	Alternatives		
		No Project	Lambie Industrial Park	Central Overhead Gen-Tie
Air Quality				
Potential to cause cumulatively considerable criteria pollutant emissions and expose sensitive receptors to substantial pollutant concentrations during construction.	SM	Less (NI)	Similar (SM)	Similar (SM)
Potential to cause cumulatively considerable criteria pollutant emissions and expose sensitive receptors to substantial pollutant concentrations during operation.	SM	Less (NI)	Similar (SM)	Similar (SM)
Biological Resources				
Potential impacts on sensitive plants and wildlife.	SM	Less (NI)	Similar (SM)	Similar (SM)
Potential impacts on State or CDFW jurisdictional waters.	SM	Less (NI)	Similar (SM)	Similar (SM)
Potential to conflict any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.	SM	Less (NI)	Similar (SM)	Similar (SM)
Potential to conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.	SM	Less (NI)	Similar (SM)	Similar (SM)
Climate Change and Greenhouse Gas Emissions				
Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases	NI	Similar (NI)	Similar (NI)	Similar (NI)
Cultural and Tribal Cultural Resources				
Cause a substantial adverse change in the significance of a historical resource	SM	Less (NI)	Similar (SM)	Similar (SM)
Cause a substantial adverse change in the significance of a unique archaeological resource	SM	Less (NI)	Similar (SM)	Similar (SM)
Disturb any human remains, including those interred outside of dedicated cemeteries	SM	Less (NI)	Similar (SM)	Similar (SM)
Cause a substantial adverse change in the significance of a tribal cultural resource	SM	Less (NI)	Similar (SM)	Similar (SM)

TABLE 8-3 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED CORBY BESS PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts	Proposed Project	Alternatives		
		No Project	Lambie Industrial Park	Central Overhead Gen-Tie
Efficiency and Energy Resources				
Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Conflict with or obstruct a state or local plan for renewable energy or energy efficiency	NI	Similar (NI)	Similar (NI)	Similar (NI)
Geology, Paleontology, and Minerals				
Directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
ii. Strong seismic ground shaking?	SM	Less (NI)	Similar (SM)	Similar (SM)
iii. Seismic-related ground failure, including liquefaction	SM	Less (NI)	Similar (SM)	Similar (SM)
iv. Landslides	SM	Less (NI)	Similar (SM)	Similar (SM)
Result in substantial soil erosion or the loss of topsoil?	SM	Less (NI)	Similar (SM)	Similar (SM)
Be located on geologic units or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse	SM	Less (NI)	Similar (SM)	Similar (SM)
Be on expansive soil, as defined in Section 1803.5.3 of the California Building Code (2022), creating substantial direct or indirect risks to life or property	SM	Less (NI)	Similar (SM)	Similar (SM)
Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature	SM	Less (NI)	Similar (SM)	Similar (SM)
Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the State	NI	Similar (NI)	Similar (NI)	Similar (NI)

TABLE 8-3 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED CORBY BESS PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts	Proposed Project	Alternatives		
		No Project	Lambie Industrial Park	Central Overhead Gen-Tie
Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?	NI	Similar (NI)	Similar (NI)	Similar (NI)
Hazards, Hazardous Materials/Waste, and Wildfire				
Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials	SM	Less (NI)	Similar (SM)	Similar (SM)
Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment	SM	Less (NI)	Similar (SM)	Similar (SM)
Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school	NI	Similar (NI)	Similar (NI)	Similar (NI)
Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code, section 65962.5 and, as a result, would it create a significant hazard to the public or the environment	SM	Less (NI)	Similar (SM)	Similar (SM)
For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard or excessive noise for people residing or working in the project area	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires	SM	Less (NI)	Similar (SM)	Similar (SM)
If located in or near state responsibility areas or lands classified as very high fire hazard severity zone:				
Substantially impair an adopted emergency response plan or emergency evacuation plan	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Due to slope, prevailing winds, and other factors, exacerbate wildfire risks, and thereby expose project occupants to, pollutant	SM	Less (NI)	Similar (SM)	Similar (SM)

TABLE 8-3 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED CORBY BESS PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts	Proposed Project	Alternatives		
		No Project	Lambie Industrial Park	Central Overhead Gen-Tie
concentrations from a wildfire or the uncontrolled spread of a wildfire				
Require the installation or maintenance of associated infrastructure (such as roads, fuel breaks, emergency water sources, power lines or other utilities) that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment	SM	Less (NI)	Similar (SM)	Similar (SM)
Expose people or structures to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes	SM	Less (NI)	Similar (SM)	Similar (SM)
Land Use and Agriculture				
Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance to non-agricultural use.	SM	Less (NI)	Similar (SM)	Similar (SM)
Conflict with existing zoning for agricultural use.	SM	Less (NI)	Less (NI)	Similar (SM)
Preclude access to an established land use.	LTS	Less (NI)	Greater (SM)	Similar (LTS)
Cause a significant impact due to a conflict with any land use plan, policy, or regulation adopted for the purpose of mitigating an environmental effect.	SM	Less (NI)	Less (NI)	Similar (SM)
Noise and Vibration				
Potential to generate a substantial increase in ambient noise levels in the project vicinity in excess of noise control standards during construction.	SM	Less (NI)	Similar (SM)	Similar (SM)
Potential to generate of a substantial increase in ambient noise levels in the project vicinity in excess of noise control standards during operation.	SM	Less (NI)	Similar (SM)	Similar (SM)
Public Health				
Potential to expose sensitive receptors to substantial pollutant concentrations during construction.	SM	NI	Similar (SM)	Similar (SM)
Potential to expose sensitive receptors to substantial pollutant concentrations during operation.	SM	NI	Similar (SM)	Similar (SM)
Socioeconomics				

TABLE 8-3 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED CORBY BESS PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts	Proposed Project	Alternatives		
		No Project	Lambie Industrial Park	Central Overhead Gen-Tie
Induce unplanned population growth or displace people or housing	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Impact the public services in Solano County, including fire and police protection, schools, parks and recreational facilities or other public facilities	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Solid Waste Management				
Generate solid waste in excess of state or local standards, or in excess of the capacity of local infrastructure, or otherwise impair the attainment of solid waste reduction goals	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Comply with federal, state, and local management and reduction statutes and regulations related to solid waste	NI	Similar (NI)	Similar (NI)	Similar (NI)
Transmission Line Safety and Nuisance				
To what extent does the project's transmission line physically or electrically satisfy the following criteria? (Via its electromagnetic field):				
Affect aviation safety	SM	Less (NI)	Similar (SM)	Similar (SM)
Interfere with radio frequency communication	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Be a source of audible noise	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Be a fire hazard	SM	Less (NI)	Similar (SM)	Similar (SM)
Be a source of hazardous shock	SM	Less (NI)	Similar (SM)	Similar (SM)
Be a source of nuisance shock	SM	Less (NI)	Similar (SM)	Similar (SM)
Affect public health	SM	Less (NI)	Similar (SM)	Similar (SM)
Transportation				
Conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities	SM	NI	Similar (SM)	Similar (SM)
Conflict or be inconsistent with CEQA Guidelines, section 15064.3, subdivision (b)	LTS	NI	Similar (LTS)	Similar (LTS)

TABLE 8-3 SUMMARY COMPARISON OF IMPACTS OF THE PROPOSED CORBY BESS PROJECT TO THE ALTERNATIVES

Environmental Topics and Impacts	Proposed Project	Alternatives		
		No Project	Lambie Industrial Park	Central Overhead Gen-Tie
Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g. farm equipment)	SM	NI	Similar (SM)	Similar (SM)
Result in inadequate emergency access	LTS	NI	Similar (LTS)	Similar (LTS)
Visual Resources				
Have a substantial adverse effect on a scenic vista	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway	LTS	Less (NI)	Similar (LTS)	Similar (LTS)
In non-urbanized areas, substantially degrade the existing visual character or quality of public views of the site and its surroundings	SU	Less (NI)	Similar (SU)	Similar (SU)
Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area	SM	Less (NI)	Similar (SM)	Similar (SM)
Water Resources				
Violate water quality standards or contribute to water quality impacts of surface or groundwater	SM	Less (NI)	Similar (SM)	Similar (SM)
Impact water supply or groundwater recharge	LTS	Similar (LTS)	Similar (LTS)	Similar (LTS)

Notes: Impact conclusions for the project and the alternatives are shown using these abbreviations:
NI = no impact, meaning no potential to affect the resource
LTS = less-than-significant impact, no mitigation required
SM = significant impact that can be mitigated to a less-than-significant level
SU = significant and unavoidable impact that cannot be mitigated to a less-than-significant level
The comparisons of impacts to the project are conveyed using these abbreviations:
- Less
- Similar
- Greater

TABLE 8-4 STAFF CONTRIBUTORS TO THE ALTERNATIVES ANALYSIS	
Technical Area	**Staff**
Agriculture and Land Use	Negar Vahidi, MPA; Tatiana Inouye, MESM
Air Quality	Tao Jiang, Ph.D., P.E.
Biological Resources	Julie Myrah
Climate Change and Greenhouse Gas Emissions	Jacquelyn Record
Cultural and Tribal Cultural Resources	William Larson, M.A.
Geology, Paleontology, and Minerals	Kevin M. DeLano, P.G., M.S.
Hazards, Hazardous Materials/Waste, and Wildfire	Katherine Lewis, P.G.; Paul Miller, M.S.
Noise and Vibration	Paul Miller, M.S.
Public Health	Tianyi Wang, M.S.
Socioeconomics	Negar Vahidi, MPA; Irene Kaufman, MS
Technology Alternatives and Facility Design	Michele Shi, P.E. Ardalan Sofi, Ph.D., P.E. Jacob Locsin, P.E.
Visual Resources	Michael Clayton, MS, MA
Water Resources	Nick Kerlein

8.10 References

Adeniran et al. 2022 – *Recent Advances in Aqueous Redox Flow Battery Research*. By A. Adeniran, A. Bates, N. Schuppert, A. Menon, and S. Park. *Journal of Energy Storage*. Volume 56, Part A, December 1, 2022. Accessed: January 2026. Accessed online at: https://www.sciencedirect.com/science/article/pii/S2352152X22019880

Army Logistician 2000 – Hydrogen as an Alternative Fuel. By Peter Kushnir. Army Logistician: Professional Bulletin of United States Army Logistics, PB 700-00-3. Vol. 32, Issue 3. May/June 2000. Accessed February 2025. Accessed online at: https://web.archive.org/web/20080808053811/http://www.almc.army.mil/alog/issues/MayJun00/MS492.htm

California ISO 2026 – California Independent System Operator. Resource Interconnection Management System: CAISO Generator Interconnection Queue Report. Accessed May 7, 2026. Accessed online at: https://rimspub.caiso.com/rimsui/logon.do

CEC 2021 – California Energy Commission (TN 237167). Docket: 19-SB-100. 2021 SB 100 Joint Agency Report: Charting a path to a 100% Clean Energy Future. Dated March 15, 2021. Accessed October 22, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=23-SB-100

CEC 2023 – California Energy Commission. East Road Storage Project Initial Study and Proposed Mitigated Negative Declaration. CEC-500-2023-055-D. Dated October 2023. Accessed online at: https://www.energy.ca.gov/publications/2023/initial-study-and-proposed-mitigated-negative-declaration-east-road-storage

CEC 2024a – California Energy Commission (TN 259839). Corby Open Docket. Docketed November 1, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2024e – California Energy Commission (TN 260568). Determination of Incomplete Application and Request for Information for the Corby Battery Energy Storage System Project. Docketed December 9, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2025h – California Energy Commission (TN 265205). Corby BESS (24-OPT-05) Data Request Emails. Docketed August 1, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2025j – California Energy Commission (TN 266275). Corby BESS Rev. 2 Data Requests for Alternatives. Docketed October 2, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

CEC 2025r – California Energy Commission. Long Duration Energy Storage Program. LDES Program Projects. Form Energy, Inc. (Mendocino County); and Indian Energy (San Diego County). Accessed January 2026. Accessed online at: https://www.energy.ca.gov/programs-and-topics/programs/long-duration-energy-storage-program

CEC 2026a – California Energy Commission (TN 268223). Informational and Environmental Scoping Meeting Transcript. Docketed January 12, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Data Center Knowledge 2013 – eBay Goes Live With its Bloom Powered Data Center. By Rich Miller. September 26, 2013. Accessed December 2025. Accessed online at: https://www.datacenterknowledge.com/archives/2013/09/26/ebay-goes-live-with-its-bloom-powered-data-center

DayZenLLC 2025b – DayZenLLC (TN 262894). NextEra Repeated Request For Confidentiality - Appendices 8-B 8-D 8-E and 8-F - Corby BESS Opt-In. Docketed May 1, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Dinesh et al. 2018 – *Iron-based Flow Batteries to Store Renewable Energies*. By A. Dinesh, S. Olivera, K. Venkatesh, M. S. Santosh, M. G. Priya, Inamuddin, A. M. Asiri, and H. B. Muralidhara. *Environmental Chemistry Letters*. Volume 16 683–694. February 13, 2018. Accessed January 2026. Accessed online at: https://doi.org/10.1007/s10311-018-0709-8

DOC 2025 – California Department of Conservation. California Important Farmland: Most Recent. Accessed January 22, 2026. Accessed online at: https://maps-

cadoc.opendata.arcgis.com/datasets/cadoc::california-important-farmland-most-recent/about

DOE 2001 – U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy. Hydrogen Fuel Cell Engines and Related Technologies, Module 1: Hydrogen Properties. College of the Desert, Revision 0, December 2001. Accessed December 2025. Accessed online at: https://www1.eere.energy.gov/hydrogenandfuelcells/tech_validation/pdfs/fcm01r0.pdf

DOE 2024 – U.S. Department of Energy, Office of Clean Energy Demonstrations. Long-Duration Energy Storage Demonstrations Program – Pumped Thermal Energy Storage in Alaska Railbelt. August 2024. Accessed April 2026. Accessed online at: https://www.energy.gov/sites/default/files/2024-07/FactSheet_LDESAward_Westinghouse_7.12.24.pdf

DOE 2023a – U.S. Department of Energy. Technology Strategy Assessment, Findings from Storage Innovations 2030, Sodium Batteries. July 2023. Accessed January 2026. Accessed online at: https://www.energy.gov/sites/default/files/2023-09/6_Technology%20Strategy%20Assessment%20-%20%236%20Sodium%20Batteries_508.pdf?

DOE 2023b – U.S. Department of Energy. Technology Strategy Assessment, Findings from Storage Innovations 2030, Supercapacitors. July 2023. Accessed January 2026. Accessed online at: https://www.energy.gov/sites/default/files/2024-02/10_Technology%20Strategy%20Assessment%20-%20%2310%20Supercapacitors_508_rev.pdf?

DOE 2025a – U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Hydrogen and Fuel Cell Technologies Office. Types of Fuel Cells. Accessed December 2025. Accessed online at: https://www.energy.gov/eere/fuelcells/types-fuel-cells

DOE 2025b – U.S. Department of Energy, Hydrogen and Fuel Cell Technologies Office. Hydrogen Production: Electrolysis. Accessed December 2025. Accessed online at: https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis

DTSC 2025 – Department of Toxic Substances Control. EnviroStor. Accessed on June 18, 2025. Accessed online at: https://www.envirostor.dtsc.ca.gov/public/

Duan et al. 2026 – Parasitic hydrogen bubble evolution in vanadium redox flow batteries: A lattice Boltzmann study. *Energy Conversion and Management*. Accessed February 2026. Accessed online at: https://www.sciencedirect.com/science/article/pii/S0196890425012786

Evro et al. 2024 – *Navigating battery choices: A comparative study of lithium iron phosphate and nickel manganese cobalt battery technologies.* By S. Evro, A. Abdurahman, D. Mayon, and T.S. Olusegun. *Future Batteries*. Volume 4, December 2024, 100007. Accessed January 2026. Accessed online at: https://www.sciencedirect.com/science/article/pii/S2950264024000078

ESS 2025a – ESS, Inc. Products, Energy Center™ *Rapidly deployable MWh or GWh energy storage for utility, IPP, and commercial customers*. Accessed January 2026. Accessed online at: https://essinc.com/energy-center/

ESS 2025b – ESS, Inc. Press Releases. *ESS Celebrates Commercial Launch of Energy Center™ Product*. January 16, 2025. Accessed January 2026. Accessed online at: https://essinc.com/press-releases/

Fuel Cell Store 2019 – Processing Alternative Fuels for Fuel Cells. By Dr. Colleen Spiegel. Posted March 26, 2019. Accessed December 2025. Accessed online at: https://www.fuelcellstore.com/blog-section/processing-alternative-fuels-for-fuel-cells

Gardner Cryogenics 2022 – Current Practices to Transfer and Deliver Liquid Hydrogen [workshop presentation]. By Ravi Subramanian. February 24, 2022. Accessed December 2025. Accessed online at: https://www.energy.gov/sites/default/files/2022-03/Liquid%20H2%20Workshop-Gardner%20Cryogenics.pdf

GenCell 2018 – Comparing Fuel Cell Technologies [blog]. By Shelli Zargary. August 24, 2018. Accessed December 2025. Accessed online at: https://www.gencellenergy.com/news/comparing-fuel-cell-technologies/

Global Batteries 2025 – *Understanding the Differences: Lithium Titanate Batteries vs. Other Battery Technologies*. April 11, 2025. Accessed January 2026. Accessed online at: https://www.global-batteries.com/understanding-the-differences-lithium-titanate-batteries-vs-other-battery-technologies/

Google Earth Pro 2025 – Google Earth Pro. Version 7.3.6.10441 (64-bit). Accessed January 22, 2026.

IMI 2025 – Integrated Micro-Electronics, Inc. *Sodium-ion Batteries: What You Need to Know?* February 25, 2025. Accessed January 2026. Accessed online at: https://www.global-imi.com/blog/sodium-ion-batteries-what-you-need-know

LADWP 2026 – Los Angeles Department of Water and Power. Scattergood Generating Station Units 1 and 2 Green Hydrogen-Ready Modernization Project. Accessed: February 27, 2026. Accessed online at: https://www.ladwp.com/community/construction-projects/west-la/scattergoodgenerating-station-units-1-and-2-green-hydrogen-ready-modernization-project

Liu et al. 2023 – Advancements in Supercapacitor Technologies: Applications and Future Directions. *Journal of Energy Storage*. Accessed January 2026. Accessed online at: https://www.sciencedirect.com/science/article/abs/pii/S0360319924018780

Lourenssen et al. 2019 – *Vanadium Redox Flow Batteries: A Comprehensive Review*. By K. Lourenssen, J. Williams, F. Ahmadpour, R. Clemmer, and S. Tasnim. *Journal of Energy Storage*. Volume 25, October 2019. Accessed January 2026. Accessed online at: https://www.sciencedirect.com/science/article/pii/S2352152X19302798

Luther 2025 – Luther, R. Unveiling ISO Dynamics and Market Trends for 2025. Enverus Intelligence Research. Dated May 2025. Accessed November 7, 2025. Accessed online at: https://www.enverus.com/ebooks/2025-interconnection-queue-outlook-report/

Rand et al. 2024 – Rand, J., Manderlink, N., Gorman, W., Wiser, R., Seel, J., Mulvaney Kemp, J., Jeong, S., & Kahrl, F. Queued Up: Characteristics of Power Plants Seeking Transmission Interconnection. 2024 Edition. Lawrence Berkeley National Laboratory. Published April 2024. Accessed November 7, 2025. Accessed online at: https://emp.lbl.gov/queues

Mitsubishi Electric 2023 – The Runaway Review. *Lithium Nickel Manganese Cobalt Oxide (NMC)*. By J.J. Hocken. April 17, 2023. Accessed January 2026. Accessed online at: https://mitsubishicritical.com/resources/blog/the-runaway-review/lithium-nickel-manganese-cobalt/

Nichicon 2025 – Lithium Titanate Batteries. Accessed January 2026. Accessed online at: https://www.nichicon.com/en-us/products/lithium-titanate-rechargeable-batteries/

NREL 2021 – National Renewable Energy Laboratory. Greening the Grid. *USAID Grid-Scale Energy Storage Technologies Primer*. By T. Bowen, I Chernyakhovskiy, K. Xu, S. Gadzanku, and K. Coney. July 2021. Accessed January 2026. Accessed online at: https://www.nrel.gov/docs/fy21osti/76097.pdf

Olabi et al. 2021 – *Metal-air Batteries, A Review*. By A. G. Olabi, E. T. Sayed, T. Wilberforce, A. Jamal, A. H. Alami, K. Elsaid, S. M. Rahman, S. K. Shah, and M. A. Abdelkareem. *Energies*. Volume 14. Published November 5, 2021. Accessed January 2026. Accessed online at: https://doi.org/10.3390/en14217373

Plug Power 2022 – Plug Power, Inc. The Plug EX-425D Electrolyzer. Published April 20, 2022. Accessed December 2025. Accessed online at: https://resources.plugpower.com/electrolyzers/ex-425d-f041122

Plug Power 2023 – Plug Power, Inc. Plug Megawatt Scale Fuel Cell Power Generation Brochure, North America. Published November 28, 2023. Rev: 04/23/2024. Accessed December 2025. Accessed online at: https://resources.plugpower.com/gensure-stationary-power-fuel-cell/plug-megawatt-scale-fuel-cell-power-generation-brochure-north-america

Plug Power 2024 – Plug Power, Inc. Plug's Megawatt-Scale Fuel Cell Power Generation System. Published January 17, 2024. Accessed December 2025. Accessed online at: https://resources.plugpower.com/youtube-fuel-cells-for-backup-power/plugs-megawatt-scale-fuel-cell-power-generation-system

SC 2024. Travis Air Force Base Land Use Compatibility Plan. Last updated August 8, 2024. Accessed online at: https://www.solanocounty.gov/government/resource-management/commissions-special-districts/solano-county-airport-land-use-commission

SC 2025c – Solano County. Board of Supervisors Final Minutes. Dated August 12, 2025. Accessed online at: https://www.solanocounty.gov/government/board-supervisors/board-supervisors-agendas-minutes-videos

SC 2025d – Solano County. Board of Supervisors Final Minutes. Dated August 26, 2025. Accessed online at: https://www.solanocounty.gov/government/board-supervisors/board-supervisors-agendas-minutes-videos

SC 2026 – Solano County GIS. Solano County Parcel Viewer. Accessed January 22, 2026. Accessed online at: https://solanocountygis.com/portal/apps/webappviewer/index.html?id=b2a40316824143fc9f361d5d81c51a7a

SMUD 2024 – Sacramento Municipal Utility District. 2024 News Releases and Media Advisories. *SMUD's $10 million state grant advances long-duration battery storage technology in Sacramento*. Accessed January 2026. Accessed online at: https://www.smud.org/Corporate/About-us/News-and-Media/2024/2024/SMUDs-$10-million-state-grant-advances-long-duration-battery-storage-technology-in-Sacramento

SWRC 2025 – State Water Resources Control Board. GeoTracker. Accessed on February 5, 2025. Accessed online at: https://geotracker.waterboards.ca.gov/

The Press Democrat 2025 – *Turning Rust into Renewable Energy: Power Supply Coming to Mendocino County That Relies on Iron Rust*. By Jeff Quackenbush. Published June 18, 2025. Santa Rosa, CA. Accessed January 2026. Accessed online at: https://www.pressdemocrat.com/2025/06/18/turning-rust-into-renewable-energy-power-supply-coming-to-mendocino-county-that-relies-on-iron-rust-2/

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part 1. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025d – Tetra Tech (TN 263281). Data Request Responses Set #2 Part 1. Docketed May 23, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025l – Tetra Tech (TN 265885). Data Request Response #3. Docketed September 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2025m – California Energy Commission (TN 266307). Data Response Set #4. Docketed October 3, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026a – Tetra Tech (TN 268258). Project Description Update #2. Docketed January 16, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026g – Tetra Tech (TN 268540). Application Section 2 Project Description markup file. Dated February 9, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026h – Tetra Tech (TN 269192). Data Request Response #5. Docketed September 5, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Tycorun 2025 – Tycorun Energy. *What is a Lithium Titanate Battery? Advantages, Applications, and Future Trends*. By Chase Wu. July 22, 2025. Accessed January 2026. Accessed online at: https://batteryswapstation.com/what-is-a-lithium-titanate-battery/

U.S. EPA 2023 – U. S. Environmental Protection Agency, Office of Air and Radiation. Hydrogen in Combustion Turbine Electric Generating Units, Technical Support Document. Docket ID No. EPA-HQ-OAR-2023-0072. Dated May 23, 2023. Accessed online at: https://www.epa.gov/system/files/documents/2023-05/TSD%20-%20Hydrogen%20in%20Combustion%20Turbine%20EGUs.pdf

Yan et al. 2023 – Online and noninvasive monitoring of battery health at negative-half cell in all-vanadium redox flow batteries using ultrasound. *Journal of Power Sources*. Accessed February 2026. Accessed online at: https://www.sciencedirect.com/science/article/abs/pii/S0378775323007930

Zhang et al. 2023 – The Role of Supercapacitors in Energy Systems: An Overview. *Micro and Nano Engineering*. Accessed January 2026. Accessed online at: www.linkinghub.elsevier.com/retrieve/pii/S259000722300059X

Section 9

Compliance Conditions and Compliance Monitoring Plan

9 Compliance Conditions and Compliance Monitoring Plan

9.1 Introduction

The Corby Battery Energy Storage System Project (project) Compliance Conditions of Certification (COCs), including a Compliance Monitoring Plan (Compliance Plan), are established as required by Public Resources Code sections 25532 and 25545.11. The Compliance Plan provides a means for assuring that the facility is constructed, operated, and closed in compliance with public health and safety and environmental law; all other applicable laws, ordinances, regulations, and standards (LORS); and the conditions adopted by the California Energy Commission (CEC) Final Decision (Decision) on the project's Opt-In application (OPT), or otherwise required by law. This Compliance Plan pertains only to those jurisdictional components (see **Section 3, Project Description** for a complete description of components).

The Compliance Plan is composed of elements that:

1. set forth the duties and responsibilities of the compliance project manager (CPM), the project owner or operator, delegate agencies, and others;
2. set forth the requirements for handling confidential records and maintaining the compliance record;
3. state procedures for settling disputes and making post-certification changes;
4. state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all CEC-approved COCs;
5. establish contingency planning, facility non-operation protocols, and closure requirements; and
6. establish a tracking method for the technical area COCs that contain measures required to mitigate potentially adverse project impacts associated with construction, operation, and closure below a level of significance; each technical COCs also includes one or more verification provisions that describe the means of assuring that the condition has been satisfied.

9.2 Key Project Event Definitions

The following terms and definitions help determine when various COCs are implemented.

Project Certification

Project certification occurs when the CEC adopts a decision approving the project in a publicly noticed Business Meeting or hearing. At that time, all CEC COCs become binding on the project owner and the proposed facility. Also at that time, the project enters the compliance phase. It retains the same docket number it had during its siting

review, but the letter "C" is added at the end (for example,24-OPT-05C) to differentiate the compliance phase activities from those of the Opt-In application proceeding.

Site Assessment and Pre-Construction Activities

The below-listed site assessment and pre-construction activities may be initiated or completed prior to the start of construction, subject to the CPM's approval of the specific site assessment or pre-construction activities.

Site assessment and pre-construction activities include the following, but only to the extent the activities are minimally disruptive to soil and vegetation and will not affect listed or special-status species or other sensitive resources:

1. the installation of environmental monitoring equipment;
2. a minimally invasive soil or geological investigation;
3. a topographical survey;
4. any minimally invasive work to provide safe access to the site for any of the purposes specified in 1 through 3, above; and
5. removal of small surface structures and equipment that is minimally invasive such as sheds, trailers, and similar sized structures.

Site Mobilization and Construction

When a COC requires the project owner to take an action or obtain CPM approval prior to the start of construction, or within a period of time relative to the start of construction, that action must be taken, or approval must be obtained, prior to any site mobilization or construction activities, as defined below.

Site mobilization and construction activities are the ones necessary to provide site access for construction mobilization and facility installation, including both temporary and permanent equipment and structures, as determined by the CPM.

Site mobilization and construction activities include, but are not limited to:

1. ground disturbance activities like grading, boring, trenching, leveling, mechanical clearing, grubbing, and scraping;
2. site preparation activities, such as access roads, temporary fencing, trailer and utility equipment installation, construction equipment installation and storage, equipment and supply laydown areas, borrow and fill sites, temporary parking facilities, chemical spraying, and controlled burns; and
3. permanent installation activities for all facility and linear structures, including access roads, fencing, utilities, parking facilities, equipment storage, mitigation and landscaping activities, and other installations, as applicable.

Commissioning

Commissioning activities test the functionality of the installed components and systems to ensure the facility operates safely and reliably. Commissioning provides a multistage, integrated, and disciplined approach to testing, calibrating, and proving all of the project's systems, software, and networks. For compliance monitoring purposes, examples of commissioning activities include interface connection and utility pre-testing, "cold" and "hot" electrical testing, system pressurization and optimization tests, and grid synchronization.

Start of Commercial Operation

For compliance monitoring purposes, "commercial operation" or "operation" begins once commissioning activities are complete, the certificate of occupancy has been issued, and the power plant has reached reliable steady-state electrical production. At the start of commercial operation, plant control is usually transferred from the construction manager to the plant operations manager. Operation activities can include a steady state of electrical production, or, for "deployable battery energy storage systems," a seasonal or on-demand operational regime to meet peak load demands.

Non-Operation and Closure

Non-Operation for BESS projects refers to any state in which the system is not actively charging, discharging, or providing grid services. This could be due to shutdowns for maintenance or safety, or in preparation for permanent decommissioning of the project. Proper maintenance practices shall ensure that no threats to human health or the environment occur during a long shut down.

Non-operation can encompass part or all of a facility. Non-operation can be a planned event, usually for equipment maintenance or repair, or unplanned, which is normally the result of unanticipated events or emergencies.

Closure is a facility shutdown with no intent to restart operations. It may also be the cumulative result of unsuccessful efforts to re-start over an increasingly lengthy period of non-operation. Facility closures can occur due to a variety of factors, including, but not limited to, irreparable damage and/or functional or economic obsolescence.

9.3 Roles and Responsibilities

Provided below is a general description of the compliance roles and responsibilities for CEC staff (staff) and the project owner for the construction and operation of the project.

Compliance Project Manager Responsibilities

The CPM's compliance monitoring and project oversight responsibilities include:

1. ensuring that the design, construction, operation, and closure of the project facilities are in compliance with the terms and conditions of the Decision;

2. resolving complaints;
3. processing post-certification project amendments for changes to the project description, COCs and ownership or operational control, and requests for extension of the deadline for the start of construction (see **COM-10** for instructions on filing a Petition to Amend (PTA) or to extend a construction start date);
4. documenting and tracking compliance filings;
5. ensuring that the compliance files are maintained and accessible; and
6. initiating enforcement actions.

The CPM is the central contact person for the CEC during project preconstruction, construction, operation, emergency response, and closure. The CPM will consult with the appropriate responsible parties when handling compliance issues, disputes, complaints, and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal requires CPM approval required by a condition of certification, the approval will involve appropriate staff and management. All submittals must include searchable electronic versions (pdf, MS Word, or equivalent files).

Pre-Construction and Pre-Operation Compliance Meeting

The CPM may schedule pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. These meetings are used to assist the CEC and the project owner's technical staff in the status review of all required pre-construction or pre-operation COCs and facilitate staff taking proper action if outstanding COCs remain. In addition, these meetings shall ensure, to the extent possible, that CEC's COCs do not delay the construction and operation of the plant due to last-minute unforeseen issues, or compliance oversight. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes or exchanging information regarding the project's pre-construction.

Energy Commission Record

The CEC maintains the following documents and information as public record, in either the Compliance file or Dockets Unit files, for the life of the project (or as specified otherwise):

1. all documents demonstrating compliance with any legal requirements relating to the construction, operation, and closure of the facility;
2. all Monthly Compliance Reports (MCRs) and Annual Compliance Reports (ACRs), and other required periodic compliance reports (PCRs) filed by the project owner;
3. all project-related formal complaints of alleged noncompliance filed with the CEC; and

4. all petitions for project or COC changes and the resulting action by staff or the CEC.

Chief Building Official Delegation and Agency Cooperation

Public Resources Code section 25532 requires the CEC to establish a monitoring system to assure that any facility it certifies is constructed and operated in a manner consistent with law and the CEC's Decision. In carrying out these responsibilities through monitoring construction and operation of the project, the CEC has the responsibilities of the chief building official (CBO) consistent with Health and Safety Code section 18949.27 and Title 24, part 2, section 104 (commonly referred to as the California Building Code, or CBC). Staff may delegate some CBO responsibility to either an independent third-party contractor or a local building official, as per section 103.3 of part 2 of the CBC. However, staff retains CBO authority when selecting a delegate CBO (DCBO), including the interpretation and enforcement of state and local codes, and the use of discretion, as necessary, in implementing the various codes and standards. (See section 104.1 of part 2 of the CBC).

The DCBO will be responsible for the implementation of all appropriate codes, standards, and CEC requirements. The DCBO will conduct on-site (including linear facilities) reviews and inspections at intervals necessary to fulfill these responsibilities. The project owner will pay all DCBO fees necessary to cover the costs of these reviews and inspections.

Project Owner Responsibilities

Should the project be approved, the project owner is responsible for ensuring that all COCs and applicable LORS in the project Decision are satisfied. The project owner will submit all compliance submittals to the CPM for processing unless the conditions specify another recipient. The Compliance conditions regarding post-certification changes specify measures that the project owner must take when modifying the project's design, operation, or performance requirements, or to transfer ownership or operational control. Failure to comply with any of the COCs or applicable LORS may result in a non-compliance report, an administrative fine, certification revocation, or any combination thereof, as appropriate. A summary of the Compliance conditions of certification are included as **Compliance Table 1** at the end of this Compliance Plan.

9.4 Compliance Enforcement

The CEC's legal authority to enforce the terms and conditions of its Decision are specified in Public Resources Code sections 25534, 25545.11 and 25900. The CEC may amend or revoke a project certification and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Decision. The CEC's actions and fine assessments would take into account the specific circumstances of the incident(s).

Periodic Compliance Reporting

Many of the COCs require submittals in the MCRs and ACRs. All compliance submittals assist the CPM in tracking project activities and monitoring compliance with the terms and conditions of the project Decision. During construction, the project owner or an authorized agent will submit compliance reports on a monthly basis. During operation, compliance reports are submitted annually; though reports regarding compliance with various technical area COCs may be required more often (e.g. Air Quality and Biological Resources), and if the project is operating with a temporary permit to occupy. Further details regarding the MCR/ACR content and the requirements for an accompanying compliance matrix are described below.

Investigation Requests and Complaint Procedures

Any person may file a Request for Investigation alleging noncompliance with the COCs, CEC regulations, or orders. Such a request shall be filed with and reviewed by the Executive Director. The provisions setting forth the Request for Investigation process can be found in California Code of Regulations, title 20, sections 1230 through 1232.5. The Request for Investigation may result in the Executive Director bringing a complaint against the alleged violator under section 1233 and seeking administrative penalties. The California Office of Administrative Law provides on-line access to the California Code of Regulations at http://www.oal.ca.gov/.

Informal Resolution Process

Issues related to the construction or operation of a licensed facility should be directed to the CPM who will act as the point person in working with the public and project owner to resolve these concerns. The CPM can initiate meetings with stakeholders, investigate the facts surrounding the issues, obtain information from the facility owner, coordinate staff reviews of documents and information, issue reports, and facilitate solutions to issues related to the construction and operation of the facility.

Contacting the CPM seeking an informal resolution may precede the formal Request for Investigation procedure specified in California Code of Regulations, title 20, section 1231, but is not intended to be a prerequisite or requirement to utilizing the Request for Investigation process. The informal resolution process encourages all parties to openly discuss the conflict and reach a mutually agreeable solution.

Request for Informal Investigation

Any person or agency may request that the CPM conduct an informal investigation of alleged noncompliance with the CEC's conditions of certification. Upon receipt of an informal investigation request, the CPM will promptly provide both verbal and written notification to the project owner of the allegation(s), along with all known and relevant information of the alleged noncompliance. The CPM will evaluate the request and may work to informally resolve a dispute between the parties, or if the CPM determines that further investigation is necessary, will ask the project owner to promptly conduct a formal inquiry into the matter and provide a written report of the investigation results

within seven days, along with corrective measures proposed or undertaken. Depending on the urgency of the matter, the CPM may conduct a site visit and/or request that the project owner provide an initial verbal report within 48 hours.

Request for Informal Meeting

In the event that either the requesting party or CEC staff are not satisfied with the project owner's investigative report or corrective measures, either party may submit a written request to the CPM for a meeting with the project owner. The request shall be made within 14 days of the project owner's filing of the required investigative report. Upon receipt of such a request, the CPM will attempt to:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate CEC staff and staff of any other agencies with expertise in the subject area of concern, as necessary; and
3. conduct the meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner.

After the meeting, the CPM will promptly prepare and distribute copies to all parties, and to the project file, a summary memorandum that fairly and accurately identifies the positions of all parties and any understandings reached. If no agreement was reached, the CPM will direct the complainant to the formal complaint process provided under California Code of Regulations, title 20, section 1231.

9.5 Post-Certification Changes to the Energy Commission Decision

The project owner must petition the CEC pursuant to California Code of Regulations, title 20, section 1882, to amend the Final Decision to modify the design, operation, or performance requirements of the project and/or the linear facilities, or to transfer ownership or operational control of the facility. It is the responsibility of the project owner to contact the CPM to determine if a proposed project change should be considered a project modification pursuant to section 1882, and the CPM will determine whether staff approval will be sufficient, or whether CEC approval will be necessary.

A project owner is required to submit a nonrefundable $5,000 dollar fee, adjusted annually to account for inflation, for every petition to amend the license for a previously certified facility, pursuant to Public Resources Code section 25806(e). Current amounts for PTA fees are available at https://www.energy.ca.gov/programs-and-topics/topics/power-plants/licensing-and-compliance. Implementation of a project modification without first securing CEC approval may result in an enforcement action including civil penalties in accordance with Public Resources Code, sections 25534 and 25545.11.

Below is a summary of the criteria for determining the type of approval process required, reflecting the provisions of California Code of Regulations, title 20, section

1882, at the time this compliance plan was drafted. If the CEC modifies this regulation, the language in effect at the time of the requested change shall apply. Upon request, the CPM can provide sample formats of these submittals.

Changes to the Design, Operation or Performance of the Project

The project owner shall submit a Petition to Amend the CEC Decision, pursuant to California Code of Regulations, title 20, section 1882 (b), when proposing changes to the design, operation, or performance requirements of the project and/or the linear facilities. All project changes that do not require the preparation of a subsequent or supplemental environmental impact report as set forth in California Code of Regulations, title 14, sections 15162 and 15163, are subject to staff approval. Project changes that do require the preparation of a subsequent or supplemental environmental impact report shall be submitted to the CEC for consideration.

A decision by staff to approve a project change is subject to a 14-day public comment period where one may object to staff being able to approve a project change. Any such objection must make a showing supported by facts that the change does not meet the criteria for a staff approved change. Speculation, argument, conjecture, and unsupported conclusions or opinions are not sufficient to support an objection to staff approval.

If there is a valid objection to a staff action, the petition must be considered by the CEC at a publicly noticed meeting**.**

Change of Ownership and/or Operational Control

Changes of ownership or operational control shall be approved by staff. Upon approval, the new owner/operator is obligated to follow all project conditions of certification and applicable laws. Failure to do so subjects the new owner/operator to enforcement actions and civil penalties under Public Resources Code section 25534.

9.6 Emergency Response Contingency Planning and Incident Reporting

To protect public health and safety and environmental quality, the COCs include contingency planning and incident reporting requirements to ensure compliance with necessary health and safety practices. A well-drafted contingency plan avoids or limits potential hazards and impacts resulting from serious incidents involving personal injury, hazardous spills, flood, fire, explosions, or other catastrophic events and ensures a comprehensive timely response. All such incidents must be reported immediately to the CPM and documented. These requirements are designed to protect the public, build from “lessons learned,” limit the hazards and impacts, anticipate and prevent recurrence, and provide for the safe and secure shutdown and restart of the facility.

9.7 Facility Closure and Certification Termination

The CEC cannot reasonably foresee all potential circumstances in existence when a facility permanently closes. Therefore, the closure conditions provided herein strive for flexibility to address circumstances that may exist at some future time. Most importantly, facility closure must be consistent with all applicable CEC COCs and the LORS in effect at that time.

Prior to submittal of a Petition to amend the certification and a corresponding Closure Plan to the CEC, the project owner and the CPM will hold a meeting to discuss the specific contents of the plan. In the event that significant issues are associated with the plan's approval, the CPM will hold one or more workshops and/or the CEC may hold public hearings as part of its approval procedure.

The Closure Plan will be subject to staff review and modification and will be presented to the CEC for approval. The approved closure plan will set forth the requirements to decommission the facility and restore the site pending the future use of the site. With the exception of measures to eliminate any immediate threats to public health and safety or to the environment, facility closure activities cannot be initiated until the CEC approves the Final Closure Plan and Cost Estimate, and the project owner complies with any requirements the CEC may incorporate as conditions of approval of the Final Closure Plan.

Upon approving the project owner's final closure plan, the CEC may direct that the facility's certification be terminated at the time staff finds the closure process contained in the plan has been completed.

9.8 Compliance Conditions of Certification

COM-1 - Unrestricted Access. The project owner shall take all steps necessary to ensure that the CPM, responsible CEC staff, and delegate agencies or consultants, have unrestricted access to the facility site, related facilities, project-related staff, and the records maintained on site for the purpose of conducting audits, surveys, inspections, or general or closure-related site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time, whether such visits are by the CPM in person or through representatives from CEC staff, delegated agencies, or consultants.

COM-2 - Compliance Record. The project owner shall maintain electronic copies of all project files and submittals accessible on site, or at an alternative site approved by the CPM, for the operational life and closure of the project. The files shall also contain at least one hard copy of:

1. the facility's Opt-In Application;
2. all amendment petitions and CEC orders;
3. all site-related environmental impact and survey documentation;

4. all appraisals, assessments, and studies for the project;
5. all finalized original and amended structural plans and "as-built" drawings for the entire project;
6. all citations, warnings, violations, or corrective actions applicable to the project; and
7. the most current versions of any plans, manuals, and training documentation required by the COCs or applicable LORS.

The CEC staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files maintained pursuant to this COC, which includes electronic submission of records to the CEC.

COM-3 - Compliance Verification Submittals. Verification lead times associated with the start of construction may require the project owner to file submittals during application or amendment processing, particularly if construction is planned to commence shortly after certification. The verification procedures may be modified as necessary by the CPM after providing notice to the project owner.

A cover letter from the project owner or an authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. The cover letter subject line shall identify the project by docket number, cite the appropriate condition of certification number(s), and give a brief description of the subject of the submittal. When submitting supplementary or corrected information, the project owner shall reference the date of the submittal and the condition(s) of certification applicable.

All reports and plans required by the project's COCs shall be submitted in a searchable electronic format (pdf, MS Word or Excel, etc.) and include standard formatting elements such as a table of contents identifying by title and page number each section, table, graphic, exhibit, or addendum. All report and/or plan graphics and maps shall be adequately scaled and shall include a key with descriptive labels, directional headings, a bar scale, and the most recent revision date.

The project owner is responsible for the content and delivery of all verification submittals to the CPM showing that the actions required by the verification were satisfied by the project owner or an agent of the project owner. All submittals shall be submitted electronically by email.

COM-4 - Pre-Construction Matrix and Tasks Prior to Start of Construction. Prior to construction, the project owner shall submit to the CPM a compliance matrix including only those conditions that must be fulfilled before the start of construction. The matrix shall be included with the project owner's first compliance submittal or prior to the first pre-construction meeting, whichever comes first, and shall be submitted in a format similar to the description below.

Site mobilization and construction activities shall not start until the following have occurred:

1. the project owner has submitted the pre-construction matrix and all compliance verifications pertaining to pre-construction COCs; and
2. the CPM has issued an authorization-to-construct letter to the project owner.

The deadlines for submitting various compliance verifications to the CPM allow staff sufficient time to review and comment on, and, if necessary, also allow the project owner to revise the submittal in a timely manner. These procedures help ensure that project construction proceeds according to schedule. Failure to submit required compliance documents by the specified deadlines may result in delayed authorizations to commence various stages of the project.

If the project owner anticipates site mobilization immediately following project certification, it may be necessary for the project owner to file compliance submittals prior to project certification. In these instances, compliance verifications can be submitted in advance of the required deadlines and the anticipated authorizations to start construction. The project owner must understand that submitting items required in compliance verifications prior to these authorizations is at the owner's own risk. Any approval by CEC staff prior to project certification is subject to change based upon the Commission Decision, or amendment thereto, and early staff compliance approvals do not imply that the CEC will certify the project for actual construction and operation.

COM-5 - Compliance Matrix. The project owner shall submit a compliance matrix to the CPM with each MCR and ACR. The compliance matrix shall identify:

1. the technical area (e.g., biological resources, facility design, etc.);
2. the condition number;
3. a brief description of the verification action or submittal required by the condition;
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.);
5. the expected or actual submittal date;
6. the date a submittal or action was approved by the Delegate Chief Building Official (DCBO), CPM, or delegate agency, if applicable;
7. the compliance status of each condition (e.g., "not started," "in progress" or "completed" (include the date)); and
8. if the condition was amended, the updated language and the date the amendment was proposed or approved.

The CPM can provide a template for the compliance matrix upon request.

COM-6 - Monthly Compliance Report and Key Events List. The first MCR is due one month following the docketing of the project's Decision unless otherwise agreed to by the CPM. The first MCR shall include the docket number and an initial list of dates for each of the events identified on the Key Events List. (The Key Events List form is found

at the end of this **Compliance Conditions and Compliance Monitoring Plan** section.) During pre-construction, construction, or closure, the project owner or authorized agent shall submit an electronic searchable version of the MCR to the CPM within 10 business days after the end of each reporting month.

MCRs shall be submitted each month until construction is complete, and the final certificate of occupancy is issued by the DCBO. MCRs shall be clearly identified for the month being reported. The MCR shall contain, at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific COCs to be submitted along with the MCR. Each of these items shall be identified in the transmittal letter, as well as the COCs they satisfy, and submitted as attachments to the MCR;
3. an initial, and thereafter updated, compliance matrix showing the status of all COCs;
4. a list of COCs that have been satisfied during the reporting period, and a description or reference to the actions that satisfied the COC;
5. a list of any submittal deadlines that were missed, accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to COCs;
7. a listing of any filings submitted to, and permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months; the project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with COCs;
9. a listing of the month's additions to the on-site compliance file; and
10. a listing of incidents, complaints, notices of violation, official warnings, and citations received during the month; a list of any incidents that occurred during the month, a description of the actions taken to date to resolve the issues; and the status of any unresolved actions noted in the previous MCRs.

COM-7 - Periodic and Annual Compliance Reports. After construction is complete, the project must submit searchable electronic ACRs to the CPM, as well as other periodic compliance reports (PCRs) required by the various technical disciplines. ACRs shall be completed for each year of commercial operation and are due each year on a date agreed to by the CPM. Other PCRs (e.g. quarterly reports, or decommissioning reports to monitor closure compliance), may be specified by the CPM. The searchable electronic copies may be filed on an electronic storage medium or by e-mail, subject to CPM approval. Each ACR must include the docket number, identify the reporting period, and contain the following:

1. an updated compliance matrix which shows the status of all COCs (fully satisfied conditions do not need to be included in the matrix after they have been reported as completed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. documents required by specific conditions to be submitted along with the ACR; each of these items shall be identified in the transmittal letter with the condition(s) it satisfies, and submitted as an attachment to the ACR;
4. a cumulative list of all post-certification changes approved by the CEC or the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings submitted to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a listing of the year's additions to the on-site compliance file;
9. an evaluation of the Site Contingency Plan, including amendments and plan updates; and
10. a listing of complaints, incidents, notices of violation, official warnings, and citations received during the year, a description of how the issues were resolved, and the status of any unresolved complaints.

COM-8 - Confidential Information. Any information that the project owner designates as confidential shall be submitted to the CEC's Executive Director with an application for confidentiality, pursuant to California Code of Regulations, chapter 7, article 2, commencing with section 2501. Any information deemed confidential pursuant to the regulations will remain undisclosed, as provided in California Code of Regulations, title 20 section 2501 *et seq*.

COM-9 - Annual Energy Facility Compliance Fee. Pursuant to the provisions of section 25806(b) of the Public Resources Code, the project owner is required to pay an annually adjusted compliance fee. Current compliance fee information is available on the CEC's website at http://www.energy.ca.gov/siting/filing_fees.html.

The project owner may also contact the CPM for the current fee information. The initial compliance fee payment is due on the date the CEC dockets its final Decision. All subsequent payments are due by July 1 of each year, in which the facility retains its certification.

COM-10 - Amendments, Staff-Approved Project Modification, and Ownership/Operational Control Changes. The project owner shall petition the CEC, pursuant to California Code of Regulations, title 20, section 1882, to modify the design, operation, or performance requirements of the project or linear facilities. The

CPM will determine whether staff approval will be sufficient, or whether CEC approval will be necessary. It is the project owner's responsibility to contact the CPM to determine if a proposed project change triggers the requirements of section 1882. Section 1882 details the required contents for a petition to amend a CEC Decision.

For changes in ownership or operational control the existing owner/operator and incoming owner/operator shall jointly in writing notify the CPM, 30 days in advance of the pending change in ownership or operational control, the fact of the change and all relevant contact information. Upon the transition, the new owner/operator will be obligated to comply with all requirements of the certification and will be subject to enforcement actions.

A project owner is required to submit a $5,000 fee for every petition to amend a previously certified facility, pursuant to Public Resources Code section 25806 (e). Current amendment fee information is available on the CEC's website at http://www.energy.ca.gov/siting/filing_fees.html.

COM-11 - Reporting of Complaints, Notices, and Citations. Prior to the start of construction or closure, the project owner shall send a letter to property owners and residences within one mile of the project boundaries, notifying them of a telephone number to contact project representatives with questions, complaints or concerns. All notifications and complaint forms shall be provided in both English and Spanish to ensure effective communication. If the telephone is not staffed 24 hours per day, it must include automatic answering with date and time stamp recording.

The project owner shall respond to all recorded complaints within 24 hours or the next business day. The project owner must post the telephone number onsite and make it easily visible to passersby during construction, operation, and closure. The project owner shall provide the contact information to the CPM and promptly report any disruption to the contact system or telephone number change to the CPM, who will provide it to any person contacting him or her with a complaint.

Within five business days of receipt, the project owner shall report, and provide copies to the CPM, of all complaints, including, but not limited to, noise and lighting complaints, notices of violation, notices of fines, official warnings, and citations. Complaints shall be logged and numbered. Noise complaints shall be recorded on the form provided in the section of the Noise and Vibration COCs. All other complaints shall be recorded on the complaint form at the end of this compliance plan. Additionally, the project owner must include in the next MCR, ACR or PCR, copies of all complaints, notices, warnings, citations and fines, a description of how the issues were resolved, and the status of any unresolved or ongoing matters.

COM-12 - Emergency Response Site Contingency Plan. No less than 60 days prior to the start of construction (or other CPM-approved) date, the project owner shall submit, for CPM review and approval, an Emergency Response Site Contingency Plan (Contingency Plan). Subsequently, no less than 60 days prior to the start of commercial

operation, the project owner shall update (as necessary) and resubmit the Contingency Plan for CPM review and approval. The Contingency Plan shall provide evidence of the facility's coordinated emergency response and recovery preparedness for a series of reasonably foreseeable emergency events. The CPM may require Contingency Plan updating over the life of the facility. Contingency Plan elements include, but are not limited to:

1. a site-specific list and direct contact information for persons, agencies, and responders to be notified for unanticipated events;
2. a detailed and labeled facility map, including all fences and gates, the windsock location (if applicable), the on and off-site assembly areas, and the main roads and highways near the site;
3. a detailed and labeled map of population centers, sensitive receptors, and the nearest emergency response facilities;
4. a description of the on-site, first response and backup emergency alert and communication systems, site-specific emergency response protocols, and procedures for maintaining the facility's contingency response capabilities, including a detailed map of interior and exterior evacuation routes, and the planned location(s) of all permanent safety equipment;
5. an organizational chart including the name, contact information, and first aid/emergency response certification(s) and renewal date(s) for all personnel regularly on-site;
6. a brief description of reasonably foreseeable, site-specific incidents and accident sequences (on- and off-site), including response procedures and protocols and site security measures to maintain twenty-four-hour site security;
7. procedures for maintaining contingency response capabilities; and
8. the procedures and implementation sequence for the safe and secure shutdown of all non-critical equipment and removal of hazardous materials and waste (also, see specific COCs for the technical areas of **Public Health, Waste Management, Hazardous Materials Management, and Wildfire**, and **Worker Safety and Fire Protection**).

COM-13 - Incident-Reporting Requirements. The project owner shall notify the CPM within one hour after it is safe and feasible, of any incident at the facility that results in any of the following:

1. An event of any kind that causes a "Forced Outage" as defined in the CAISO tariff;
2. The activation of onsite emergency fire suppression equipment to combat a fire;
3. Any chemical, gas or hazardous materials release that could result in potential health impacts to the surrounding population; or create an offsite odor issue; and

4. Notification to, or response by, any off-site emergency response federal, state or local agency regarding a fire, hazardous materials release, onsite injury, or any physical or cyber security incident.

Notification shall describe the circumstances, status, and expected duration of the incident. If warranted, as soon as it is safe and feasible, the project owner shall implement the safe shutdown of any non-critical equipment and removal of any hazardous materials and waste that pose a threat to public health and safety and to environmental quality (also, see specific COCs for the technical areas of **Public Health, Hazards, Hazardous Materials Management, Waste Management**, and **Wildfire**, and **Worker Safety and Fire Protection**).

Within six business days of the incident, the project owner shall submit to the CPM a detailed incident report that includes, as applicable, the following information:

1. A brief description of the incident, including its date, time, and location;
2. A description of the cause of the incident, or likely causes if it is still under investigation;
3. The location of any off-site impacts;
4. Description of any resultant impacts;
5. A description of emergency response actions associated with the incident;
6. Identification of responding agencies;
7. Identification of emergency notifications made to federal, state, and local agencies;
8. Identification of any hazardous materials released, and an estimate of the quantity released;
9. A description of any injuries, fatalities, or property damage that occurred as a result of the incident;
10. Fines or violations assessed or being processed by other agencies;
11. Name, phone number, and e-mail address of the appropriate facility contact person having knowledge of the event; and
12. Corrective actions to prevent a recurrence of the incident.

After the submittal of the initial report for any incident, the project owner shall submit to the CPM copies of incident reports within 48 hours of a request. The project owner shall maintain all incident report records for the life of the project, including closure.

If the project owner requests that an incident notification or report be designated as a confidential record and not publicly disclosed, the project owner shall submit copies of notices or reports with an application for confidential designation in accordance with California Code of Regulations, title 20, section 2505 et seq.

COM-14 - Non-Operation and Repair/Restoration Plans.

A. Temporary Non-Operation

1. If the facility ceases operation temporarily, whether for planned or unplanned maintenance, for longer than one week but less than three months, the project owner shall notify the CPM. If longer than three months, the project owner must work with the CPM and come to an agreement on next steps as to when the facility can feasibly return to operation, or if decommissioning is warranted.

   a. Notice to CPM

      - **Planned** non-operation for repair/maintenance shall be given at least two weeks prior to the scheduled date.
      - **Unplanned** non-operation for repair/maintenance shall be provided no later than one week after non-operation begins.

   For any non-operation, a Repair/Restoration Plan for conducting the activities necessary to restore the facility to availability and reliable and/or improved performance shall be submitted to the CPM within one week after notice of non-operation is given. If non-operation is due to an unplanned incident, temporary repairs and/or corrective actions may be undertaken before the Repair/Restoration Plan is submitted. The Repair/Restoration Plan shall include:

   1. Identification of operational and non-operational components of the plant;
   2. A detailed description of the repair and inspection or restoration activities;
   3. A proposed schedule for completing the repair and inspection or restoration activities;
   4. An assessment of whether or not the proposed activities would require changing, adding, and/or deleting any COCs, and/or would cause noncompliance with any applicable LORS; and
   5. Planned activities during non-operation, including any measures to ensure continued compliance with all COCs and LORS.

2. Written monthly updates (or other CPM-approved intervals) to the CPM for non-operational periods, until operation resumes, shall include:

   1. Progress relative to the schedule;
   2. Developments that delayed or advanced progress or that may delay or advance future progress;
   3. Any public, agency, or media comments or complaints; and
   4. Projected date for the resumption of operation.

3. During non-operation, all applicable COCs and reporting requirements remain in effect. If, after one year from the date of the project owner's last report of

productive repair/restoration plan work, the facility does not resume operation or does not provide a plan to resume operation, the Executive Director may assign suspended status to the facility and recommend commencement of permanent closure activities. Within 90 days of the Executive Director's determination, the project owner shall do one of the following:

1. If the facility has a closure plan, the project owner shall update it and submit it for CEC review and approval; or
2. If the facility does not have a closure plan, the project owner shall develop a closure plan consistent with the requirements in this Compliance Plan and submit it for CEC review and approval.

B. Extended Non-Operation

1. Non-Operation for BESS projects refers to any state in which the system is not actively charging, discharging, or providing grid services. This could be due to shutdowns for maintenance or safety, or in preparation for permanent decommissioning of the project. Proper maintenance practices shall ensure that no threats to human health or the environment occur during a long shut down.

   The project owner shall submit a Non-Operation Plan for safely suspending operations, properly disposing of hazardous materials and maintaining equipment during non-operation. The Non-Operation Plan shall include the following:

   a. Interaction with regulatory agencies;
   b. List of equipment to remain open;
   c. Site Security and staffing;
   d. System Specific Procedures;
   e. Hazardous Materials Management;
   f. Site Safety and Fire Protection; and
   g. Environmental Considerations.

2. During non-operation, all applicable conditions of certification and reporting requirements remain in effect.

COM-15 - Facility Closure Planning. To ensure that a facility's eventual permanent closure and maintenance do not pose a threat to public health and safety and/or to environmental quality, the project owner shall coordinate with the CEC to plan and prepare for eventual permanent closure.

Final Closure Plan and Cost Estimate

a. No less than one year (or other CPM-approved date) prior to initiating a permanent facility closure, or upon an order compelling permanent closure, the project owner shall submit for CEC review and approval a Final Closure Plan and Cost Estimate, which includes any site maintenance and monitoring.

Prior to submittal of the facility's Final Closure Plan to the CEC, the project owner and the CPM will hold a meeting to discuss the specific contents of the plan. In the event that significant issues are associated with the plan's approval, the CPM may hold one or more workshops and/or the CEC may hold public hearings as part of its approval procedure.

b. Final Closure Plan and Cost Estimate contents include, but are not limited to:
    1. a statement of specific Final Closure Plan objectives;
    2. a statement of qualifications and resumes of the technical experts proposed to conduct the closure activities, with detailed descriptions of previous power plant closure experience;
    3. identification of any facility-related installations or maintenance agreements not part of the CEC certification, designation of who is responsible for these, and an explanation of what will be done with them after closure;
    4. a comprehensive scope of work and itemized budget for permanent plant closure and site maintenance activities, with a description and explanation of methods to be used, broken down by phases, including, but not limited to:
        a. dismantling and demolition;
        b. recycling and site clean-up;
        c. impact mitigation and monitoring;
        d. site remediation and/or restoration;
        e. exterior maintenance, including paint, landscaping and fencing;
        f. site security and lighting; and
        g. any contingencies.
    5. a final cost estimate for all closure activities, by phases, including site monitoring and maintenance costs, and long-term equipment replacement;
    6. a schedule projecting all phases of closure activities for the power plant site and all appurtenances constructed as part of the CEC-certified project;
    7. an electronic submittal package of all relevant plans, drawings, risk assessments, and maintenance schedules and/or reports, including an above and below-ground infrastructure inventory map and registered engineer's or DCBO's assessment of demolishing the facility;
    8. for any facility that permanently ceased operation prior to submitting a Final Closure Plan and Cost Estimate and for which only minimal or no maintenance has been done since, a comprehensive condition report focused on identifying potential hazards;
    9. all information required by the facility's COCs applicable to plant closure;
    10. an equipment disposition plan, including:

a. recycling and disposal methods for equipment and materials; and

b. identification and justification for any equipment and materials that will remain on-site after closure.

11. a site disposition plan, including but not limited to proposed rehabilitation, restoration, and/or remediation procedures, as required by the COCs and applicable LORS, and site maintenance activities;

12. identification and assessment of all potential direct, indirect, and cumulative impacts and proposal of mitigation measures to reduce significant adverse impacts to a less-than-significant level. Potential impacts to be considered include, but not be limited to:

    a. traffic;

    b. noise and vibration;

    c. soil erosion;

    d. air quality degradation;

    e. solid waste;

    f. hazardous materials;

    g. waste water discharges; and

    h. contaminated soil;

13. identification of all current COCs, LORS, federal, state, regional, and local planning efforts applicable to the facility, and

14. proposed strategies for achieving and maintaining compliance during closure;

15. updated mailing list and Listserv of all responsible agencies, potentially interested parties, and property owners within one mile of the facility;

16. identification of alternatives to plant closure and assessment of the feasibility and environmental impacts; and

17. description of and schedule for security measures and safe shutdown of all non-critical equipment and removal of hazardous materials and waste (also see COCs **Public Health, Waste Management, Hazards, Hazardous Materials Management, and Wildfire**, and **Worker Safety and Fire Protection**).

If the CEC-approved Final Closure Plan and Cost Estimate procedures are not initiated within one year of the plan approval date, it shall be updated and re-submitted to the CEC for supplementary review and approval. If a project owner initiates but then suspends closure activities, and the suspension continues for longer than one year, the CEC may initiate corrective actions against the project owner to complete facility closure. The project owner remains liable for all costs of contingency planning and closure.

Upon approving the project owner's final closure plan, the CEC may direct that the facility's certification be terminated at the time staff finds the closure process contained in the plan has been completed.

KEY EVENTS LIST

PROJECT: Corby Battery Energy Storage System Project

DOCKET #: 24-OPT-05C

COMPLIANCE PROJECT MANAGER: Anwar Ali

EVENT DESCRIPTION	DATE
Certification Date	
Obtain Site Control	
On-line Date	
POWER PLANT SITE ACTIVITIES	
Start Site Assessment/Pre-construction	
Start Site Mobilization/Construction	
Begin Pouring Major Foundation Concrete	
Begin Installation of Major Equipment	
Completion of Installation of Major Equipment	
First Start/Energizing of BESS	
Obtaining Building Occupation Permit	
Start Commercial Operation	
Complete All Construction	
TRANSMISSION LINE ACTIVITIES	
Start Transmission Line Construction	
Complete Transmission Line Construction	
Synchronization with Grid and Interconnection	
WATER SUPPLY LINE ACTIVITIES	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	
Start Recycled Water Supply Line Construction	
Complete Recycled Water Supply Line Construction	

COMPLIANT REPORT AND RESOLUTION FORM

COMPLAINT LOG NUMBER:_____ DOCKET NUMBER: 24-OPT-05C

PROJECT NAME: Corby Battery Energy Storage Systems Project

COMPLAINANT INFORMATION

NAME:_____ PHONE NUMBER:_____

ADDRESS:_____

COMPLAINT

DATE COMPLAINT RECEIVED:_____ TIME COMPLAINT RECEIVED:_____

COMPLAINT RECEIVED BY: _____ ☐ TELEPHONE ☐ IN WRITING (COPY ATTACHED)

DATE OF FIRST OCCURRENCE:_____

DESCRIPTION OF COMPLAINT (INCLUDING DATES, FREQUENCY, AND DURATION):_____

FINDINGS OF INVESTIGATION BY PLANT PERSONNEL:_____

DOES COMPLAINT RELATE TO VIOLATION OF A CEC REQUIREMENT? ☐ YES ☐ NO

DATE COMPLAINANT CONTACTED TO DISCUSS FINDINGS:_____

DESCRIPTION OF CORRECTIVE MEASURES TAKEN OR OTHER COMPLAINT RESOLUTION:_____

DOES COMPLAINANT AGREE WITH PROPOSED RESOLUTION? ☐ YES ☐ NO

IF NOT, EXPLAIN:_____

CORRECTIVE ACTION

IF CORRECTIVE ACTION NECESSARY, DATE COMPLETED:_____

DATE FIRST LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

DATE FINAL LETTER SENT TO COMPLAINANT (COPY ATTACHED):_____

OTHER RELEVANT INFORMATION:_____

PLANT MANAGER SIGNATURE:_____ DATE:_____

Section 10

Mandatory Opt-In Requirements

10 Mandatory Opt-In Requirements

10.1 "Facility" Definition Met

Summary of Requirements

The California Energy Commission (CEC) has jurisdiction to certify certain non-fossil-fueled power plants, energy storage facilities, the electric transmission lines from these facilities to the first point of interconnection, related manufacturing facilities, and hydrogen production facilities.[1] A developer with an eligible project may optionally file with the CEC to obtain a certification to construct and operate the facility. The CEC is the "lead agency" under the California Environmental Quality Act (CEQA) and is required to prepare an environmental impact report, mitigated negative declaration, or negative declaration, for any facility that elects to opt-in to the CEC's jurisdiction. With exceptions, the issuance of a certificate by the CEC for an eligible facility is in lieu of any permit, certificate, or similar document required by any state, local, or regional agency, or federal agency to the extent permitted by federal law, and supersedes any applicable statute, ordinance, or regulation of any state, local, or regional agency, or federal agency to the extent permitted by federal law.

An eligible Opt-In project must meet one or more of the definitions of a "facility"[2]:

1. A solar photovoltaic or terrestrial wind electrical generating powerplant with a generating capacity of 50 megawatts or more and any facilities appurtenant thereto.
2. An energy storage system[3] that can store 200 megawatt hours or more of electrical energy.
3. A stationary electrical generating powerplant using any source of thermal energy, with a generating capacity of 50 megawatts or more, excluding any powerplant that burns, uses, or relies on fossil or nuclear fuels.
4. A discretionary project[4] for which the applicant has certified that a capital investment of at least two hundred fifty million dollars will be made over a period of five years [5]
    a. Energy storage systems or component manufacturing;
    b. Wind systems or component manufacturing;
    c. Solar photovoltaic energy systems or component manufacturing; or
    d. Specialized products, components, or systems that are integral to renewable energy or energy storage technologies.

1 Pub. Resources Code, § 25545.1
2 Pub. Resources Code, § 25545(b)
3 Pub. Util. Code, § 2835
4 Pub. Resources Code, § 21080
5 Pub. Resources Code, § 25545(b)(4)

e. The manufacture, production, or assembly of specialized products, components, or systems that are integral to renewable energy or energy storage technologies.

5. An electric transmission line carrying electric power from a facility described in paragraph (1), (2), or (3) that is located in the state to a point of junction with any interconnected electrical transmission system.
6. A hydrogen production facility and associated onsite storage and processing facilities that do not derive hydrogen from a fossil fuel feedstock and that receive funding from any of the following:
   a. The Hydrogen Program established pursuant to Section 25664.1.
   b. Section 91530, as added by the Safe Drinking Water, Wildfire Prevention, Drought Preparedness, and Clean Air Bond Act of 2024.
   c. The Alliance for Renewable Clean Hydrogen Energy Systems (ARCHES) authorized by Article 15 (commencing with Section 12100.160) of Chapter 1.6 of Part 2 of Division 3 of Title 2 of the Government Code, as awarded by the United States Department of Energy Office of Clean Energy Demonstrations.
7. A geothermal powerplant or a project that comprises multiple geothermal powerplants on a single site.

The applicant must provide an explanation of how the facility meets the definition of a facility in the Opt-In application, including detailed descriptions and specific information.[6]

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, CEC staff concludes the following fact is supported by substantial evidence in the record:

1. The project is an up to 1,200 megawatt-hour (MW-hour) battery energy storage system thus exceeding the minimum 200 MW-hour threshold required to meet the definition of a facility.

Conclusions

Based on the foregoing findings, CEC staff concludes the project meets one or more of the definitions of a “facility,” as required under Public Resources Code section 25545(b) and recommends the CEC may adopt these proposed findings and conclusions as they are supported by substantial evidence in the record.

6 Cal. Code Regs., tit. 20, § 1877(b)

10.2 Requirements for Covered Project Under the Labor Code

Summary of Requirements

Public Resources Code section 25545.3.3 requires the applicant to certify that either the entirety of the construction of the project is a public work for purposes of Chapter 1 (commencing with section 1720) of Part 7 of Division 2 of the Labor Code, or the construction of the project is not in its entirety a public work for which prevailing wages must be paid, but all construction workers employed on the project will be paid at least the general prevailing rate of per diem wages. In addition, Public Resources code section 25545.3.5 requires the applicant to certify that a skilled and trained workforce will be used to perform all construction work.

Proposed Finding of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, CEC staff concludes the following facts are supported by substantial evidence in the record.

In Appendix 1-B (TT 2024j), the applicant has certified that it would comply with the prevailing wage and workforce requirements set forth in Assembly Bill 205, including that all construction workers employed on the project would be paid at least the general prevailing rate of per diem wages or apprenticeship wages, as applicable, in accordance with Public Resources code section 25545.3.3; and a skilled and trained workforce would be used to perform all construction work on the project, in accordance with Public Resources code section 25545.3.5. Specifically, the applicant certifies as follows:

1. Prevailing Wages:
    a. The prevailing wage requirement of AB 205 would be included in all contracts for the performance of all construction work.
    b. All contractors and subcontractors would be required to pay to all construction workers employed in the construction of the project at least the general prevailing rate of per diem wages or the applicable apprentice prevailing rate, as applicable.
    c. All contractors and subcontractors performing construction work on the project would be required to employ apprentices at no less than the ratio required in Section 1777.5 of the Labor Code.
    d. All contractors and subcontractors performing construction work would maintain and verify payroll records pursuant to Section 1776 of the Labor Code, make those records available for inspection and copying as provided therein, and furnish those payroll records to the Labor Commissioner pursuant to Section 1771.4 of the Labor Code.
    e. The obligation of the contractors and subcontractors to pay prevailing wages and employ apprentices may be enforced by the Labor Commissioner through the issuance of a civil wage and penalty assessment pursuant to Section 1741 of the

Labor Code, which may be reviewed pursuant to Section 1742 of the Labor Code, within 18 months after the completion of the project, or by an underpaid worker through an administrative complaint or civil action, or by a joint labor-management committee though a civil action under Section 1771.2 of the Labor Code. If a civil wage and penalty assessment is issued, the contractor, subcontractor, and surety on a bond or bonds issued to secure the payment of wages covered by the assessment would be liable for liquidated damages pursuant to Section 1742.1 of the Labor Code.

f. Alternatively, all contractors and subcontractors performing construction work on the project may be subject to a project labor agreement, which would include the following. If the project is subject to such a project labor agreement, then sections 1.d and 1.e, above, do not apply:

   i. Provisions requiring payment of prevailing wages to all construction workers employed in the construction of the project and for enforcement of that obligation through an arbitration procedure.

   ii. Targeted hiring provisions, including a targeted hiring plan, on a craft-by-craft basis to address job access for local, disadvantaged, or underrepresented workers, as defined by a relevant local agency.

   iii. Apprenticeship utilization provisions that commit all parties to increasing the share of work performed by state-registered apprentices above the state-mandated minimum ratio required in Section 1777.5 of the Labor Code.

   iv. Apprenticeship utilization provisions that commit all parties to hiring and retaining a certain percentage of state-registered apprentices that have completed the Multi-Craft Core pre-apprenticeship training curriculum referenced in subdivision (t) of Section 14005 of the Unemployment Insurance Code.

2. Skilled and Trained Workforce:

   a. All contracts for the performance of work would require that every contractor and subcontractor at every tier would individually use a skilled and trained workforce to construct the project.

   b. Every contractor and subcontractor would be required to use a skilled and trained workforce to construct the project.

   c. Contractors and subcontractors that fail to use a skilled and trained workforce would be subject to the penalties provided in Section 2603 of the Public Contract Code. to use a skilled and trained workforce may be assessed by the Labor Commissioner within 18 months of completion of the project using the same procedures for issuance of civil wage and penalty assessments pursuant to Section 2603 of the Public Contract Code. Penalties shall be paid to the State Public Works Enforcement Fund.

   d. The Applicant would retain records, including copies of monthly reports, that demonstrate compliance with Chapter 2.9 (commencing with Section 2600) of

Part 1 of Division 2 of the Public Contract Code while the project or contract is being performed and for three years after completion of the project or contract. The Applicant would submit these records immediately upon request of the commission. When submitted to the commission, these records shall be a public record under the California Public Records Act (Chapter 3.5, commencing with Section 6250 of Division 7 of Title 1 of the Government Code) and shall be open to public inspection.

e. Alternatively, all contractors and subcontractors performing work on the project may be subject to a project labor agreement, which would include the following. If the project is subject to such a project labor agreement, then sections 2.c and 2.d, above, do not apply:

   i. Provisions requiring compliance with the skilled and trained workforce requirement and for enforcement of that obligation through an arbitration procedure.

   ii. Targeted hiring provisions, including a targeted hiring plan, on a craft-by-craft basis to address job access for local, disadvantaged, or underrepresented workers, as defined by a local agency.

   iii. Apprenticeship utilization provisions that commit all parties to increasing the share of work performed by state-registered apprentices above the state-mandated minimum ratio required in Section 1777.5 of the Labor Code.

   iv. Apprenticeship utilization provisions that commit all parties to hiring and retaining a certain percentage of state-registered apprentices that have completed the Multi-Craft Core pre-apprenticeship training curriculum referenced in subdivision (t) of Section 14005 of the Unemployment Insurance Code.

3. In Section 1.1.5 of the Opt-In application (TT 2024a), the applicant certifies that that the construction of the covered project is not in its entirety a public work for which prevailing wages must be paid under Article 1 (commencing with Section 1720) of Chapter 1 of Part 7 of Division 2 of the Labor Code.

4. The applicant further certifies that the project would be constructed pursuant to a project labor agreement (PLA) and that the terms of the PLA would comply with Section 25545.3.3 (b) (6) and Section 25545.3.5 (e) and therefore would meet the requirements of all of the applicable provisions of Section 25545.3.

Conclusions

Based on the foregoing certifications, CEC staff concludes the record contains substantial evidence to support a proposed finding of compliance with Public Resources Code sections 25545.3.3 and 25545.3.5. In addition, to comport with sections 25545.3.3 and 25545.3.5, CEC staff proposes Condition of Certification (COC) **MAND-1** requiring compliance with the labor requirements as set forth in this finding.

10.3 Identification of Whether Site is Located at a Prohibited Area

Summary of Requirements

The Opt-In applicant must identify whether the project is on a prohibited site as identified in Public Resources Code section 25527 or on a site designated by the California Coastal Commission under Public Resources Code section 30413(b) or on a site designated by the San Francisco Bay Conservation and Development Commission under Government Code section 66645(b). For projects on such a site, the Opt-In application shall include documentation of the approval of the public agency having ownership or control of the land.[7]

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, CEC staff concludes the following facts are supported by substantial evidence in the record:

- As part of its application, the applicant has identified that the project is in unincorporated Solano County. The project site is not on a prohibited site identified in Public Resources Code section 25527, which includes a state, regional, County, or city park; wilderness, scenic, or natural reserve, area for wildlife protection, recreation, historic preservation; or natural preservation area. Similarly, consistent with Public Resources Code section 25527, there are no estuaries in an essentially natural and undeveloped state on the project site.
- The project site is not in an area designated by the California Coastal Commission under Public Resources Code section 30413(b).
- The project is not on a site designated by the San Francisco Bay Conservation and Development Commission as identified in Public Resources Code section 66645(b).

Conclusions

Based on the location of the project, CEC staff has concluded that the site is not within a prohibited site as identified in Public Resources Code section 25527 or on a site designated by the California Coastal Commission under Public Resources Code section 30413(b) or on a site designated by the San Francisco Bay Conservation and Development Commission under Government Code section 66645(b). CEC staffstaff recommends the CEC may adopt this proposed finding and conclusion as it is supported by substantial evidence in the record.

10.4 Net Positive Economic Benefit to the Local Government

Summary of Requirements

Public Resource Code section 25545.9(a) states:

7 Cal. Code Regs., tit. 20, § 1877(e)

The commission shall not certify a site and related facility under this chapter unless the commission finds that the construction or operation of the facility will have an overall net positive economic benefit to the local government that would have had permitting authority over the site and related facility.

Economic benefits may include, but are not limited to, employment growth, housing development, infrastructure and environmental improvements, assistance to public schools and education, assistance to public safety agencies and departments, and property taxes and sales and use tax revenues.[8]

Under Public Resource Code section 25545.9(b), there is a rebuttable presumption that the construction or operation of the facility will have an overall net positive economic benefit to Solano County. Application Sections 1.1.5.6 (TT 2024a) and 4.14.3.3 (TT 2024c) show a net positive economic benefit to Solano County related to employment growth and tax revenues (i.e., property and sales taxes). CEC staff is unaware of any information in the record that rebuts the presumption and thus staff recommends the CEC find the project results in an overall net positive economic impact to Solano County.

10.5 Legally Binding Enforceable Agreement(s) for Community Benefits of the Project

Summary of Requirements

Public Resources Code section 25545.10(a) states that the CEC shall not certify a site and related facility unless the CEC finds that the applicant has entered into one or more legally binding and enforceable agreements with, or that benefit, a coalition of one or more community-based organizations, such as workforce development and training organizations, labor unions, social justice advocates, local governmental entities, California Native American tribes, or other organizations that represent community interests, where there is mutual benefit to the parties to the agreement.[9]

The topics and specific terms in the community benefits agreements may vary and may include workforce development, job quality, and job access provisions that include, but are not limited to, any of the following[10]:

1. Terms of employment, such as wages and benefits, employment status, workplace health and safety, scheduling, and career advancement opportunities.
2. Worker recruitment, screening, and hiring strategies and practices, targeted hiring planning and execution, investment in workforce training and education, and worker voice and representation in decision making affecting employment and training.

8 Cal. Code Regs., tit. 20 § 1879(a)(7); Pub. Resources Code § 25545.9
9 Pub. Resources Code, § 25545.10(a)
10 Id.

3. Establishing a high road training partnership, as defined in Section 14005 of the Unemployment Insurance Code.

The topics and specific terms in the community benefits agreement may also include, but not be limited to, funding for or providing specific community improvements or amenities such as park and playground equipment, urban greening, enhanced safety crossings, paving roads and bike paths, and annual contributions to a nonprofit or community-based organization that awards grants to organizations delivering community-based services and amenities .[11]

The topics and specific terms in agreements with California Native American tribes may include, but not be limited to, cultural preservation and revitalization programs, joint management and stewardship agreements, open-space preservation agreements, repatriation and reparations agreements, and other compensatory mitigation programs.[12]

Proposed Findings of Fact

Based on the information provided in the application, submitted executed agreement, and additional evidence and information as described below and contained in the record of this proceeding, CEC staff concludes the following facts are supported by substantial evidence in the record:

1. The applicant has entered into a legally binding and enforceable agreement with the Solano Community Foundation, a grantmaking organization that awards grants and scholarships to improve the lives of Solano County residents. Solano Community Foundation is a qualified community-based organization under Public Resources Code section 25545.10(a). Specifically, funds have been identified for:
    a. Solano Community Foundation General Operating Fund to support implementation of community-based philanthropic programs.
    b. Education Plus! Program Fund to support classroom grants to educators in Solano County.
    c. Solano Community Impact Fund to support grantmaking and strategic community investments.
    d. A Hand Up Fund, which helps clients secure Social Security, disability benefits, and healthcare access and provides assistance with clothing for job interviews, vehicle repairs essential for employment, and housing application support (NEE 2025a).

[11] Pub. Resources Code § 25545.10(b)
[12] Pub. Resources Code § 25545.10(c)

Conclusions

Based on the foregoing proposed findings, CEC staff concludes that the applicant has entered into one or more legally binding and enforceable agreements with, or that benefit a coalition of one or more community-based organizations as specified in Public Resources Code section 25545.10.Therefore, CEC staff recommends the CEC adopt proposed findings and conclusions consistent with staff's recommendation based on the identified evidence in the administrative record.

In addition, CEC staff proposes COC **MAND-2** requiring reporting on compliance with the community benefits agreement requirement as set forth in this finding (see subsection "10.10 Proposed Conditions of Certification").

10.6 Identification of Public Agencies that Received Notice of the Application

Summary of Requirements

Consistent with Public Resources Code sections 25519 and 25545.8, CEC staff notified the following agencies of the Opt-In application: Solano County (various departments), City of Vacaville (various departments), California Department of Fish and Wildlife, Department of Toxic Substances Control, Central Valley Regional Water Quality Control Board, State Water Resources Control Board, California Public Utilities Commission, California Attorney General, Solano Irrigation District, Yolo-Solano Air Quality Management District, Native American Heritage Commission, U.S. Army Corps of Engineers, Travis Air Force Base, U.S. Fish and Wildlife Service, Federal Aviation Administration (FAA), California Air Resources Board, California Department of Conservation, California Independent System Operator, California Department of Transportation(Caltrans), California Department of Forestry and Fire Protection (Cal Fire), Office of Environmental Health Hazard Assessment (OEHHA), California Highway Patrol, U.S. Environmental Protection Agency (EPA), Cal/OSHA, Department of Pesticide Regulation, California Office of Historic Preservation,, California Geological Survey, Dixon Fire Protection District, Dixon Unified School District, California Natural Resources Agency, Natural Resources Conservation Services, California Geological Survey, and California Environmental Protection Agency.

10.7 Environmental Leadership Development Project Requirements

Summary of Requirements

An Opt-In application is deemed an environmental leadership development project certified by the Governor and eligible for streamlined procedures,[13] if the CEC verifies that the project meets the conditions under Public Resources Code section 21183 and

13 Pub. Resources Code, §§ 21178 et seq.

mitigates greenhouse gas (GHG) impacts as required under Public Resources Code section 21183.6.[14]

Under Public Resources Code section 21183, the following conditions must be met:

1. The Project will result in a minimum investment of $100,000,000 in California upon completion of construction.
2. The project creates high-wage, highly skilled jobs that pay prevailing wages and living wages, provides construction jobs and permanent jobs for Californians, helps reduce unemployment, and promotes apprenticeship training as defined in Public Resources Code section 21183.5.
3. For environmental leadership development projects[15], the project does not result in any net additional emission of GHG, including GHG emissions from employee transportation, as determined by compliance with Public Resources Code section 21183.6.
4. The applicant demonstrates compliance with the requirements of recycling commercial solid waste and organic solid waste as required under Chapter 12.8 (commencing with Section 42649) and Chapter 12.9 (commencing with Section 42649.8) of Part 3 of Division 30, as applicable.
5. The applicant has entered into an agreement that all mitigation measures required to certify the project must be conditions of approval of the project. For environmental mitigation measures, the applicant agrees that those measures will be monitored and enforced by the lead agency for the life of the obligation.
6. The applicant agrees to pay the costs of the trial court and the court of appeal in hearing and deciding any case challenging a lead agency's action on the certified project.
7. The applicant agrees to pay the costs of preparing the record of proceedings for the project concurrent with review and consideration of the project under this division.
8. The applicant demonstrates that the record of proceedings is being prepared in accordance with Public Resources Code section 21186.

Under Public Resources Code section 21183.6, quantification and mitigation of impacts of environmental leadership development projects[16] from the impacts of GHG must be as follows:

1. The environmental baseline for GHG emissions be based on the physical environmental conditions in the vicinity of the project site at the time the application is submitted.[17]

14 Cal. Code Regs., tit. 20, § 1877(h); Pub. Resources Code § 25545.13
15 Pub. Resources Code, § 21180(1), (2), and (3)
16 Id.
17 Cal. Code Regs., tit. 14, § 15125

2. The mitigation of the impacts resulting from the emissions of GHG must be achieved in accordance with the following priority:
   a. Direct emissions reductions from the project that also reduce emissions of criteria air pollutants or toxic air contaminants through implementation of project features, project design, or other measures, including, but not limited to, energy efficiency, installation of renewable energy electricity generation, and reductions in vehicle miles traveled.
   b. The remaining unmitigated impacts shall be mitigated by direct emissions reductions that also reduce emissions of criteria air pollutants or toxic air contaminants within the same air pollution control district or air quality management district in which the project is located.
   c. The remaining unmitigated impacts shall be mitigated through the use of offsets that originate within the same air pollution control district or air quality management district in which the project is located, consistent with the Health and Safety Code[18], including, the requirement that the offsets be real, permanent, quantifiable, verifiable, and enforceable, and shall be undertaken from sources in the community in which the project is located or in adjacent communities.
   d. The remaining unmitigated impacts shall be mitigated using of offsets that originate from sources that provide a specific, quantifiable, and direct environmental and public health benefit to the region in which the project is located.

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, CEC staff recommends the CEC make the following findings and conclusions because the record contains substantial evidence for their support.

Public Resources Code Section 21183 Required Proposed Findings

1. The project would result in a minimum investment of $100,000,000 in California upon completion of construction (TT 2024a).
2. The applicant has identified that construction of the project would generate employment. Construction is anticipated to last up to 15 months and employ an average of 80 construction workers. There would be an estimated peak of approximately 131 workers on-site during the peak construction month (TT 2025a).
3. For project operations, 6 full-time employees per year are anticipated over the 30-year expected lifetime of the project. In addition, one major maintenance inspection will take place annually, requiring approximately 20 personnel for approximately one week (TT 2024c). Approximately every 2 to 3 years, the facility will require battery

18 Pub. Resources Code, § 38500

augmentation to maintain Project capacity, which would involve a crew of approximately 20 additional workers onsite for approximately 3 months to install and connect additional batteries.

   a. The applicant has certified that these workers would be paid prevailing wages and living wages ((TT 2024j).

   b. The proposed project is an energy storage facility and is therefore a qualified environmental leadership development project under Public Resources Code sections 25545.13 and 21183.

4. As described in **Section 5.1, Air Quality**, and **Section 5.3, Greenhouse Gas Emissions** of the Staff Assessment, by displacing energy from natural gas powerplants, the project would not result in any net additional emissions of GHG. Therefore, the project complies with Public Resources Code section 21183.6.

5. In order to comply with recycling commercial solid waste and organic solid waste requirements under Public Resources Code sections 42649 and 42649.8, as applicable the applicant would ensure that recycling of commercial and organic waste are stipulations in the construction contractor's contract. Construction materials would be sorted on-site throughout construction and transported to appropriate waste management facilities. Recyclable materials would be separated from non- recyclable items and stored until they could be transported to a designated recycling facility. Recycling would be in accordance with applicable California state requirements. Wooden construction waste (such as wood from wood pallets) would be sold, recycled, or chipped and composted. Other compostable materials, such as vegetation, may also be composted off-site. Non-hazardous construction materials that cannot be reused or recycled would likely be disposed of at a Class II/III landfill. Hazardous waste and electronic waste would not be placed in a landfill but rather would be stored onsite for less than 90 days and would be transported to a treatment, storage, and disposal facility by a licensed hazardous waste transporter. All contractors and workers would be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste. The potential waste streams that would be generated during construction and operation of the project, the waste classifications, and disposal facilities in the vicinity of the Project are detailed in **Section 4.19, Utilities and Service Systems** of the Opt-In Application package. Furthermore, the project must comply with the California Green Building Standards Code, also known as CALGreen, which includes mandatory recycling. Code Section 5.408 requires that 65 percent of the nonhazardous waste be recycled or salvaged for reuse. Code Section 5.408.3 (excavated soil and land clearing debris) requires that 100 percent of trees, stumps, rocks, and associated vegetation and soils resulting from land clearing shall be reused or recycled.

6. Upon certification, the applicant will be subject to all mitigation measures in the form of conditions of certification. Those conditions will be fully enforceable by the CEC or another agency designated by the CEC. The CEC will monitor and enforce the mitigation measures for the lifetime of the project through its statutory authority to issue civil penalties for violations of conditions of certification.

7. The applicant has agreed to pay the potential costs of the trial court and the court of appeal in hearing and deciding any case challenging the CEC's action on the certified project.
8. The applicant has agreed to pay the costs of preparing the record of proceedings for the project concurrent with review and consideration of the project.
9. The preparation and certification of the record of proceedings for this project complies with Public Resources Code section 21186.

Public Resources Code Section 21183.6 Required Proposed Findings

1. The application demonstrates that the environmental baseline for greenhouse gas emissions was based on the physical environmental conditions in the vicinity of the project site when the application was submitted on November 7, 2024.
2. This document requires any and all mitigation measures resulting from the emissions of greenhouse gases to be in accordance with the priorities outlined in Public Resources Code section 21183.6.

Conclusions

CECCEC staff has verified and concluded that the record contains evidence to support a finding that the project meets the requirements of, and may be deemed, an environmental leadership development project under Public Resources Code section 21183. In addition, CEC staff proposes COC **WASTE-1** and recommends Mitigation Measure **WASTE-1** (for the portion of the gen-tie transmission line to be built and operated by PG&E) requiring compliance with solid waste management mitigation measures required to certify the project, as set forth in this proposed finding (see **Section 5.12, Solid Waste Management**, subsections 5.12.5 and 5.12.6).

CECCEC staff has also verified and concluded that the record contains evidence to support a finding that the impacts of greenhouse gas emissions were quantified and mitigated in a manner consistent with Public Resources Code section 21183.6, and therefore staff recommends that the CEC may adopt this proposed finding and conclusion.

10.8 Potential for Restoring the Site if Application Rejected

Summary of Requirements

As part of the Opt-In application, the applicant must demonstrate the potential for restoring the site as necessary to protect the environment if the CEC denies approval of the application.[19]

19 Cal. Code Regs., tit. 20, § 1879(a)(3); Pub. Resources Code, § 25523(e)

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, CEC staff proposes the following findings:

1. Project site preparation and construction would not begin prior to application approval and thus restoration work would not be necessary.

Conclusions

CEC staff concludes that the applicant has sufficiently evaluated and identified the potential for restoring the project site as required under California Code of Regulations, title 20, section 1879(a)(3) and therefore staff recommends that the CEC may adopt this proposed finding and conclusion.

10.9 Minimum Standards of Efficiency

Summary of Requirements

The applicant must demonstrate compliance with the recommended minimum standards of efficiency for the operation of a new facility at a particular site that are technically and economically feasible, as required under Public Resources Code section 25402(d). The applicant must certify that standards recommended by the CEC have been considered, which certification shall include a statement specifying the extent to which conformance with the recommended standards will be achieved.[20]

Proposed Findings of Fact

Based on the information provided in the application, and additional evidence and information as described below and contained in the record of this proceeding, CEC staff recommends the CEC make the following findings and conclusions because the record contains substantial evidence for their support:

The CEC has not recommended minimum standards of efficiency for the proposed project. The applicant is not required to demonstrate compliance with minimum efficiency standards, as no minimum efficiency standards have been applied to this project.

Conclusions

Based on the foregoing proposed findings, the applicant is not required to demonstrate compliance with minimum efficiency standards, as no efficiency standards apply to this project. Therefore, CEC staff proposes the CEC may adopt this finding and conclusion as it is supported by substantial evidence in the record.

20 Cal. Code Regs., tit. 20 § 1879(a)(1); Pub. Resources Code, § 25523(d)

10.10 Proposed Conditions of Certification

MAND-1 Construction Labor Requirements The project owner shall implement the construction labor requirements of Public Resources Code sections 25545.3.3 and 25545.3.5.

Verification: Upon request by the Compliance Project Manager (CPM), the project owner shall provide documentation evidencing compliance with the requirements of Public Resources Code sections 25545.3.3 and 25545.3.5.

MAND-2 Community Benefits Agreement The project owner shall provide progress reports on the implementation of the community benefits agreement with Solano County Community Foundation (TN 267229), and/or any additional community benefits agreements. The reports shall include:

1. Status on fulfillment of any donation and other obligations, commitments, or requirements set forth in its community benefits agreement, including the amount of any funding distributed to the community-based organization at the time of the report;
2. Any relevant documentation demonstrating implementation and fulfillment such as an acknowledgement from the community-based organization verifying fulfillment;
3. Any changes or updates to the community benefits agreement, including any additional community benefits agreements;
4. Details of any issues or barriers regarding implementation, and;
5. Any other information the project developer deems relevant.

Verification: The project owner shall include the required progress report starting in the first Monthly Compliance Report, as described in Section 9, Compliance Conditions and Compliance Monitoring Plan, of the Staff Assessment, then on a quarterly basis during construction. Following completion of construction, the project owner shall include the required progress report in each Annual Compliance Report until all obligations under the community benefits agreement, including donations, commitments, or requirements have been fully satisfied. The final progress report should summarize achievements from the initial to the last report. It should also include a narrative of any issues and complaints received, if applicable. Individuals and organizations do not need to be identified specifically, but a general statement of where the complaint originated from is required (e.g., local community member or business, out of area environmental organization, local or other State Department of Business Oversight, etc.) and whether the feedback is regarding the agreement or implementation of the agreement. Any information that the project owner requests to be maintained as confidential shall be submitted in accordance with COM-8 Confidential Information (see Section 9, Compliance Conditions and Compliance Monitoring Plan).

10.11 References

NEE 2025a – NextEra Energy Resources, LLC (TN 267229). Community Benefit Agreement Progress Report. Dated November 14, 2025. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024a – Tetra Tech (TN 259872). Corby BESS Opt-in Application Volume 1 Part. Dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2024j – Tetra Tech (TN 259887). Volume 2 App 1 Executive Summary Appendices. Dated November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Section 11

Override Findings and Recommendations

11 Override Findings and Recommendations

11.1 Summary of Staff's Recommendations

The proposed project has significant and unavoidable impacts on visual resources. CEC staff evaluated the potential for the project to substantially degrade the existing visual character or quality of public views of the site and its surroundings. CEC staff concluded that this impact remains significant even after implementation of conditions of certification (COCs) (see **Section 5.15, Visual Resources**, in this Staff Assessment). While CEC staff concludes there is a significant and unavoidable impact to visual resources, staff concludes there is substantial and compelling evidence in the record to support a CEC decision to approve the project by issuing a statement of overriding considerations.

CEC staff's recommendations are based solely on the unique facts and circumstances in this record and are not intended to be generally applicable to pending or future recommendations regarding other applications for siting certifications made to the CEC.

11.2 Discussion of Significant Environmental Impacts That Cannot be Avoided or Mitigated and Project Benefits

California Code of Regulations, title 14, section 15091 provides that the CEC cannot approve a project with one or more significant environmental effects unless the CEC makes certain findings based on substantial evidence in the record.

These findings include specific economic, legal, social, technological, or other considerations, including provision of employment opportunities for highly trained workers, make infeasible the mitigation measures or project alternatives identified in the environmental analysis.

In addition, California Code of Regulations, title 14, section 15093, authorizes an agency, based on substantial evidence to balance, as applicable, the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered acceptable.

Taken together, the regulations require an agency to not approve a project with significant and unavoidable impacts unless, after careful consideration, the agency identifies other benefits of the project that outweigh the environmental damage.

As detailed in **Section 5.15, Visual Resources**, significant and unavoidable impacts have been identified in the area of visual resources. Specifically, CEC staff concludes

given the existing physical landscape, the project would substantially degrade the existing visual character or quality of public views of the site and its surroundings.

While CEC staff concludes there is a significant and unavoidable impact to visual resources, CEC staff concludes there is substantial and compelling evidence in the record to support a CEC decision to approve the project by issuing a statement of overriding considerations. As set forth in **Section 3, Project Description, Section 4.1, Facility Design, Section 4.3, Transmission System Engineering, Section 5.1, Air Quality, Section 5.3, Climate Change and Greenhouse Gas Emissions, Section 5.11, Socioeconomics**, and **Section 7, Public Benefits**, the project provides regional economic benefits, construction and engineering jobs, grid reliability benefits, support for California's clean energy and greenhouse gas emission reduction goals, and displacement of fossil fuel generation and corresponding air pollution.

If the CEC decides to approve the project, there is substantial evidence to support such action.

11.3 Findings of Fact

Based on substantial evidence, CEC staff makes the following findings:

1. Impacts to visual resources caused by the project will be significant and unavoidable at six key observation points (KOP) (KOP 2a, KOP 2b, KOP 3, KOP 5a, KOP 5b, KOP 5c).
2. No feasible migitation measures were identified in the Staff Assessment that could mitigate or avoid the project's significant effects on visual resources.
3. The project would provide the following benefits:
    a. Assists California load serving entities in meeting obligations under California's Renewable Portfolio goals Program and Senate Bills 100 and 1020, which require renewable energy sources and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035, 95 percent of all retail electricity sales by 2040, and 100 percent of all retail electricity sales by 2045.
    b. Assists California load serving entities in meeting obligations under the California Public Utilities Commission's Mid-Term Reliability Procurement requirements.
    c. Provides a new source of energy storage that assists the state in achieving its energy storage mandates.
    d. Complements renewable generation by storing electricty during peiods of low demand or high renewable generation and discharging it during peak hours when the system is most stressed.
    e. Contributes to the state's electrical grid reliability by providing renewable electricity during increased load demand.

f. Enhances system reliability both within the California Independent System Operator controlled grid and the broader western interconnection and provides frequency response.

g. Interconnects in a critical location on the backbone of California's transmission network and is situated just outside a significant northern Calfiornia load center and will support delivery of preferred resources to load.

h. Provides 300 megawatts of capacity with minimal upgrades to existing infrastructure. The grid at Vaca-Dixon is already built to handle high power flows (voltage level, transformer capacity, and transmission headroom), so the project can plug in with minimal additional infrastructure.

i. Minimizes the length of transmission lines by being located near an existing substation reducing environmental disturbance and energy line loss.

j. Utilizes the PG&E Vaca-Dixon Substation which is the only high-voltage transmission substation within 50 miles and crucial for power delivery and reliability for the region. Connecting the project to Vaca-Dixon puts a large, flexible battery project exactly where the grid needs it, boosting power flow, reliability, congestion relief, and operational flexibility at a key transmission node.

k. Benefits the community through a legally binding and enforceable agreement with the Solano Community Foundation, a grantmaking organization that awards grants and scholarships to improve the lives of Solano County residents.

l. Supports the Solano County economy by investing in the local community, creating local construction jobs, and increasing tax and fee revenue to the County, including the following:

   i. Project construction is estimated to directly generate an average of 80 construction jobs over the 14- to 15-month construction schedule, with an estimated peak of approximately 131 workers on-site during the peak construction month.

   ii. On an as-needed basis, over the 30-year expected lifetime of the project, 6 operational employees would be needed. Up to 20 personnel would be needed for one major maintenance inspection that would take place annually, for one week. In addition, approximately every 2 to 3 years, the facility would require battery augmentation to maintain project capacity; requiring a crew of approximately 20 additional workers for approximately 3 months to install and connect additional batteries.

   iii. Local capital expenditures during 14- to 15-month construction are estimated to be approximately $1.1 million. Based on the Solano County sales and use tax rate of 7.375 percent, these expenditures would generate approximately $81,100 in sales tax revenues, with approximately $66,000 paid to the State and the remaining $15,100 paid to the County. Overall, project construction would generate approximately $18.2 million in sales and use tax revenues, with $3.4 million accruing to the County.

iv. Over the lifetime of the project, operational total tax revenue from property taxes would be approximately $70.5 million (TT 2024c).

4. There are no feasible alternatives to the Corby BESS Project that would avoid or substantially lessen the significant impacts to visual resources and achieve most of the benefits and objectives of the project.

11.4 Recommended Determination Regarding CEQA Override Considerations

Based on substantial evidence and detailed analysis, CEC staff recommends the CEC find that on balance, the project's significant impacts to visual resources are outweighed by the project's benefits and considered acceptable.

Section 12

Authors and Reviewers

12 Authors and Reviewers

Lead Agency—California Energy Commission

Section Authors

Staff	Section(s)
Alvin Greenberg, Ph.D.	Worker Safety and Fire Protection
Anwar Ali, Ph.D.	Compliance Conditions and Compliance Monitoring Plan
Ardalan Sofi, Ph.D., P.E.	Facility Design; Efficiency and Energy Resources
Chris Huntley	Biological Resources
Chuck Huffine, P.E., PTOE, AICP, RSP1	Transportation
Dan Dowdy, P.E.	Worker Safety and Fire Protection
Collin Crawford-Martin	Noise and Vibration
Eileen Allen, M.A.	Land Use and Agriculture; Socioeconomics
Greg Chittick, M.S	Appendix D Dispersion and Frequency Analysis
Irene Kaufman, M.S.	Socioeconomics; Environmental Justice; Alternatives
Jacob Locsin	Facility Reliability
Jacquelyn Record	Climate Change and Greenhouse Gas Emissions; Mandatory Opt-In Requirements
Joakim Osthus	Transportation
Joseph Douglas	Compliance Conditions and Compliance Monitoring Plan
Julie Myrah	Biological Resources
Katherine Lewis, P.G., C.E.G.	Hazards, Hazardous Materials, and Wildfire
Kevin DeLano, P.G., M.S.	Geology, Paleontology, and Minerals
Lauren DeOliveira, M.S.	Cultural and Tribal Cultural Resources
Luis Rosas	Noise and Vibration
Michael Clayton, M.S., M.A.	Visual Resources
Michael Hoke, M.A.	Cultural and Tribal Cultural Resources
Michele Shi, P.E.	Facility Design; Facility Reliability; Efficiency and Energy Resources
Negar Vahidi, MPA	Land Use and Agriculture; Socioeconomics; Environmental Justice; Alternatives; Mandatory Opt-In Requirements
Nick Kehrlein	Solid Waste Management; Water Resources; Mandatory Opt-In Requirements
Paul Miller, M.S.	Hazards, Hazardous Materials, and Wildfire; Noise and Vibration; Transportation
Roger Hatheway, M.A.	Cultural and Tribal Cultural Resources
Sudath Edirisuriya	Transmission Line Safety and Nuisance

Staff	Section(s)
Tao Jiang, Ph.D, P.E.	Air Quality
Tatiana Inouye, MESM	Land Use and Agriculture; Alternatives
Tianyi Wang, M.S.	Air Quality; Public Health
Usama Khalid, M.S.	Project Description; Transmission System Engineering

Supervision and Management

Staff	Role
Regina Galer, MPA, M.A.	Director, Siting, Transmission, and Environmental Protection (STEP) Division
Dian Vorters, J.D.	Deputy Director, STEP Division
Eric Knight	Siting and Environmental Branch Manager
Brett Fooks, P.E.	Safety and Reliability Branch Manager
Joseph Hughes, P.E.	Engineering Branch Manager
Ann Crisp	Biological Resources Unit Supervisor
Kaycee Chang, M.S.	CEQA Project Management Unit Supervisor
Eric Knight	(Acting) Land Use and Public Services Unit Supervisor
Gabriel Roark, M.A.	Cultural Resources Unit Supervisor
Hurshbir Shahi, M.S.	Compliance and Enforcement Unit Supervisor
Wenjun Qian, Ph.D., P.E.	Air Quality and Public Health Unit Supervisor
Shahab Khoshmashrab, P.E.	Facility Design Unit Supervisor
Abdel-Karim Abulaban, Ph.D., P.E., QSD/QSP	Geosciences Unit Supervisor
William E. Larson, M.A.	Work Authorization Manager and Reviewer, Cultural and Tribal Cultural Resources

Project Management/Legal

Staff	Role
Renee Longman, M.S., AICP, LEED AP BD+C	Project Manager
Briana Ziff, J.D.	Staff Counsel
Jared Babula, J.D.	Staff Counsel
Ralph Lee, J.D.	Staff Counsel

Project Assistant

Staff	Role
Marichka Haws	Project Assistant
Lorenzo Cano	Student Assistant
Yiming Luo	Student Assistant
Grace Keenan	Student Assistant

Staff	Role
Lila Kellison-Miller	Student Assistant
Sierra Madsen	Student Assistant
Tyler Cadwell	Student Assistant
Itzel Parada	Student Assistant

Appendix A

Cumulative Scenario

Appendix A: Cumulative Scenario

Preparation of the cumulative impact analysis is required under the California Environmental Quality Act (CEQA). In the CEQA Guidelines, “a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts” (Cal. Code Regs., tit. 14, § 15130(a)(1)). Cumulative impacts must be addressed if the incremental effect of a project, combined with the effects of other projects, is “cumulatively considerable,” and therefore potentially significant (Cal. Code Regs., tit. 14, § 15130(a)(2)). Such incremental effects are to be “viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects” (Cal. Code Regs., tit. 14, § 15164(b)(1)). Together, these projects comprise the cumulative scenario which forms the basis of the cumulative impact analysis.

The discussion of cumulative impacts must reflect the severity of the impacts, as well as the likelihood of their occurrence, yet the discussion need not be as detailed as the discussion of environmental impacts attributable to the project alone. When the combined cumulative impact associated with the project's incremental effect and the effects of other projects is not significant, the EIR shall briefly indicate why the cumulative impact is not significant and is not discussed in further detail in the EIR. (Cal. Code Regs., tit. 14, § 15130(a)(2)).

The cumulative impact discussion is intended to be guided by the standards of practicality and reasonableness (Cal. Code Regs., tit. 14, § 15130(b)). CEQA Guidelines sections applicable to a cumulative impact analysis state the following:

- CEQA Guidelines Section 15355: “Cumulative impacts” refers to two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts.
  - (a) The individual effects may be changes resulting from a single project or a number of separate projects.
  - (b) The cumulative impact from several projects is the change in the environment which results from the incremental impact of the project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time.
- CEQA Guidelines Section 15130 (a)(1): As defined in Section 15355, a cumulative impact consists of an impact which is created as a result of the combination of the project evaluated in the EIR together with other projects causing related impacts. An EIR should not discuss impacts which do not result in part from the project evaluated in the EIR.

- CEQA Guidelines Section 15064(h)(4): The mere existence of significant cumulative impacts caused by other projects alone shall not constitute substantial evidence that the proposed project's incremental effects are cumulatively considerable.

Development of Cumulative Projects Scenario

Under CEQA, there are two commonly used methodologies for establishing the cumulative impact scenario—the "list approach" and the "projections approach." The list approach uses a "list of past, present, and probable future projects producing related or cumulative impacts" (Cal. Code Regs., tit. 14, § 15130(b)(1)(A)). The projections approach uses a "summary of projections contained in an adopted local, regional or statewide plan, or related planning document, that describes or evaluates conditions contributing to the cumulative effect" (Cal. Code Regs., tit. 14, § 15130(b)(1)(B)).

This staff assessment utilizes both approaches to provide an understanding and context for analyzing the potential cumulative effects related to the proposed project. Planning documents are used to provide an overall context for the cumulative scenario over a 10- to 20-year planning horizon, while the project list supplements the cumulative scenario with information on specific projects that are proposed or under construction in the surrounding communities. The cumulative projects list initially focused on projects within a six-mile radius of the proposed project site as the direct and indirect effects of a project are generally evaluated within a smaller radius. Projects located outside the six-mile radius could still contribute to regional cumulative impacts due to their size and resource demands, and were included based on the potential to cause related cumulatively considerable impacts.

The analysis of cumulative effects considers several variables including geographic (spatial) limits, time (temporal) limits, and the characteristics of the resource being evaluated. For each resource area, this staff assessment evaluates the cumulative impacts as follows:

- Defines the geographic scope of cumulative impact analysis for each discipline, based on the likely geographic extent in which proposed project impacts could combine with those of other projects.
- Evaluates the effects of the proposed project in combination with past and present (existing) projects within the geographic scope defined for each discipline.
- Evaluates the effects of the proposed project with reasonably foreseeable probable future projects that occur within the geographic scope defined for each discipline.

Projects and Planning Documents Considered in the Cumulative Scenario

Applicable cumulative projects consist of projects that are currently operational, and those that are reasonably foreseeable and probable and would be constructed or operated during the life of the proposed project. Cumulative projects include land

development or public works projects that are planned or approved and, given their physical proximity to the project area or an overlap in the transportation routes used during construction, could potentially contribute to the same environmental effects as the proposed project.

The cumulative projects list was compiled from the following sources:

- Applicant provided list (TT 2024c)
- City of Vacaville Planning Department — Planned and approved development projects within the City.
- City of Dixon Planning Department — Planned and approved development projects within the City.
- Solano County General Plan — Planned and approved projects within the County.
- Caltrans District 4 — Transportation infrastructure projects, including improvements along Interstate 80 and State Route 113.
- California Energy Commission — Application materials for renewable generation and energy storage projects in the vicinity of the proposed project.

Applicable Planning Documents and Growth Projections

As described in CEQA Guidelines Section 15130(b), planning documents that are relevant to developing a cumulative scenario include a general plan, regional transportation plan, plans for the reduction of greenhouse gas emissions, or an adopted or certified environmental document for such a plan. The planning documents presented below provide information on future development projects, plans, population and employment projections, and other factors that could combine with the effects of the proposed project. Because implementation of the proposed project is anticipated to occur over a 30-year period and is affected by many factors such as funding, technical recommendations, public involvement, and seasonal conditions, long-range planning documents and projections have been used to forecast comprehensive future conditions that may occur simultaneously with the proposed project (TT 2024c).

Solano County General Plan. The Solano County General Plan was adopted in August 2008 and serves as the overarching long-range planning document guiding growth and development in the unincorporated areas of the County (Solano County 2008). The General Plan establishes goals, policies, and implementation measures across a range of topics including land use, transportation, energy, conservation, and public services. Key elements relevant to the cumulative scenario include agricultural land protection, infrastructure planning, and policies supporting renewable energy development.

The General Plan anticipates modest population and infrastructure growth in rural Solano County and emphasizes that urban development should be directed towards incorporated cities while preserving rural character and agricultural productivity in

unincorporated areas. Environmental constraints to future development within the County include flood risk, air quality degradation, and sensitive biological resources (e.g., special-status wildlife, special-status plants, sensitive natural communities, seasonal wetlands, and aquatic features) (TT 2024c).

Solano County General Plan, Housing Element. The most recent Housing Element of the Solano County General Plan was adopted in 2023 and covers the planning period from 2023 to 2031 (Solano County 2023). The Housing Element addresses projected population growth for Solano County and includes the following:

- An assessment of existing and projected housing needs;
- An inventory of land suitable for residential development;
- Goals and policies to promote housing affordability; and
- A schedule of programs and actions to meet the County's share of regional housing needs.

City of Vacaville General Plan 2035. The City of Vacaville General Plan 2035, adopted in August 2015, outlines policies and goals for land use, housing, transportation, public services, and sustainability through 2035 (City of Vacaville 2015). Although the proposed Corby BESS project site is located just outside of the city limits in unincorporated Solano County, a portion of the project's gen-tie route is located within the City (see Figure 3-3) and regional impacts such as traffic, air quality, and emergency response are closely linked to planning decisions within the City.

The General Plan anticipates steady population and employment growth, particularly in the southern and eastern portions of the City closest to the proposed project site. The plan calls for targeted infrastructure investments and emphasizes infill development, transportation efficiency, and sustainable energy use. The General Plan's Environmental Impact Report identifies cumulative impacts related to regional air quality, greenhouse gas emissions, and biological resources.

Plan Bay Area 2050. Plan Bay Area 2050, adopted by the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG) in 2021, serves as the Bay Area's Sustainable Communities Strategy and Regional Transportation Plan (MTC/ABAG 2021). The plan integrates land use, transportation, economic, and environmental strategies to reduce greenhouse gas emissions and improve regional resilience. It projects population growth of approximately 8 to 10 million people across the Bay Area by 2050, with Solano County expected to accommodate a share of this growth through infill housing and infrastructure upgrades.

Cumulative Projects List

A list of cumulative projects is shown in **Table A-1** along with an identification number, a brief description, distance from the project site, and status. The cumulative impacts analysis for each resource area included in this document considers a geographic area

appropriate for each technical area (e.g., six miles for dispersion modeling, 10 miles for biological resource special-status species, etc.).

Staff's cumulative impact analysis considers environmental effects associated with those projects identified in **Table A-1** in conjunction with the impacts identified for the project. **Table A-1** provides information on cumulative projects that could combine with the effects of the proposed project.

The detailed analysis of the cumulative impacts on individual environmental resources is provided within the respective technical sections of the environmental impact assessment.

References

CAISO 2025 – California ISO. Cluster 15 Interconnection Requests. Accessed July 9, 2025. Accessed online at: https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Fwww.caiso.com%2Fdocuments%2Fcluster-15-interconnection-requests.xlsx&wdOrigin=BROWSELINK

California Forever 2025 – California Forever. California Forever Development Proposal. Accessed March 24, 2025. Accessed online at: https://californiaforever.com/

Caltrans 2026 – California Department of Transportation (Caltrans). Solano I-80 Express Lanes. Accessed February 10, 2026. Accessed online at: https://dot.ca.gov/caltrans-near-me/district-4/d4-projects/solano-i-80-express-lanes-project

CARB 2022 – California Air Resources Board (CARB). 2022 Scoping Plan for Achieving Carbon Neutrality. Accessed March 24, 2025. Accessed online at: https://ww2.arb.ca.gov/our-work/programs/ab-32-climate-change-scoping-plan

CEC 2024 – California Energy Commission (CEC). Adopted 2023 Integrated Energy Policy Report with Errata. Accessed March 24, 2025. Accessed online at: https://efiling.energy.ca.gov/GetDocument.aspx?tn=254463

City of Dixon 2025 – City of Dixon. Cumulative Major Planning Projects in Dixon. Accessed October 17, 2025.

City of Vacaville 2024a – City of Vacaville. Peabody-Allison Specific Plan. Accessed March 24, 2025. Accessed online at: https://www.cityofvacaville.gov/government/community-development/planning-and-development/long-range-projects/peabody-allison-specific-plan

City of Vacaville 2024b – City of Vacaville. Development Agreements. Accessed March 24, 2025. Accessed online at: https://www.cityofvacaville.gov/government/community-development/planning-and-development/development-activity/development-agreements

City of Vacaville 2024c – City of Vacaville. Centennial Park Master Plan Document. Accessed March 24, 2025. Accessed online at: https://www.cityofvacaville.gov/government/parks-and-recreation/parks-fields/centennial-park

City of Vacaville 2015 – City of Vacaville. General Plan 2035. Adopted August 2015. Accessed March 24, 2025. Accessed online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents

Lagoon Valley 2024 – Lagoon Valley. Lagoon Valley Development Overview. Accessed March 24, 2025. Accessed online at: https://www.cityofvacaville.gov/government/community-development/planning-and-development/development-activity/residential-activity/lower-lagoon-valley

MTC/ABAG 2021 – Metropolitan Transportation Commission/Association of Bay Area Governments (MTC/ABAG). Plan Bay Area 2050. Adopted October 2021. Accessed March 24, 2025. Accessed online at: https://planbayarea.org/digital-library/plan-bay-area-2050

SCWA 2022 – Solano County Water Agency. North Bay Aqueduct Alternate Intake Project. Adopted August 2008. Accessed March 24, 2025. Accessed online at: https://scwa2.com/documents/publications/NBA%20Funding%20-%20Flyer.pdf

Solano County 2023 – Solano County. Solano County Housing Element 2023-2031. Adopted April 2023. Accessed March 24, 2025. Accessed online at: https://www.solanocounty.com/depts/rm/documents/housing_element.asp

Solano County 2008 – Solano County. Solano County General Plan. Adopted August 2008. Accessed March 24, 2025. Accessed online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp

Solano County Public Works 2025 – Solano County Public Works. Chip Seal 2025. Accessed July 9, 2025. Accessed online at: https://www.solanocounty.gov/archival-document?document=https://content.solanocounty.gov/sites/default/files/2025-06/061225-093%20-%20NOE%20-%20RESOURCE%20MANAGEMENT%20-%20CHIP%20SEAL%202025.pdf&title=Archival%20document:%20061225-093%20-%20NOE%20-%20RESOURCE%20MANAGEMENT%20-%20CHIP%20SEAL%202025.pdf

STA 2024 – Solano Transportation Authority (STA). Solano I-80 Express Lanes Project. Accessed August 29, 2023. Accessed online at: https://sta.ca.gov/project/solano-managed-lanes/

TT 2024c – Tetra Tech (TN 259874). Corby BESS Opt-in Application Volume 1 Part 3. Docketed November 4, 2024. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
1	I-80 Express Lanes Project	Addition of express lanes on Interstate 80 through Solano County.	Solano County	0.00	Completed in 2025
2	Vaca Dixon Power Center Project	57 MW/57MWh BESS + 100 MW/400MWh BESS	APN 0133-060-060	0.14	Under review
3	Clear Channel Outdoor Digital Billboard Conversion	Convert static billboard to digital (45' height, 648 sq ft).	APN 0133-060-060	0.18	Application Incomplete
4	North Village	Lot D/H: 84 units. Area Plan 2: 1146 units. Lot E: 11 units. Unit 7: 295 units (277 built, 18 under construction).	East of Interstate 505, south of Midway Road, north of Vaca Valley Parkway, and west of Leisure Town Road. See individual phases for more detail.	0.32	Lot D/H: Incomplete Area Plan 2: Approved Lot E: Incomplete Unit 7: Under Construction
5	– North Village Lot D/H	84 units.	APNs: 0133-190-510, -530, 0133-030-300, and 0133-561-500	0.32	Application Incomplete
6	– North Village Area Plan 2	1146 units.	APNs: 0106-280-060, 0106-240-290, -300, -330, 0106-270-220, 0133-030-330 and -340	0.32	Approved
7	– North Village Lot E	11 units.	APNs: 0133-030-350 and 0133-561-500	0.32	Application Incomplete
8	– North Village Unit 7 (Avondale & Bristow)	295 units (277 built, 18 under construction).	APNs: 0106-321-010 through -120, 0106-322-010 through -210, 0106-323-010 through -200, 0106-324-010 through -190, 0106-325-010 through -220, 0106-326-010 through -110, 0106-330-010 through -030, 0106-331-010 through -110, 0106-332-010 through -030, 0106-333-010 through -040, 0106-334-010 through -060, 0106-335-010 through -460,	0.32	Under Construction

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
			0106-336-010 through -140, 0106-337-010 through -110, 0106-338-010 through -050, 0106-339-010 through -060, 0106-341-010 through -210, 0106-342-010 through -170, 0106-343-010 through -040, 0106-343-060 through -160, 0106-344-010 through -100, 0106-345-010 through -040, and 0106-346-010 through -140.		
9	Chip Seal 2025: Walnut Road	Chip seal project extending along Walnut Road to Vacaville County Line.	Solano County	0.44	Proposed
10	Weber Road Construction Yard	Temporary construction/materials yard for up to six tenants.	5419 Weber Rd, APN 109-270-050 and 109-220-060	0.52	Completed
11	Camping World Service Bay Expansion	Add three new maintenance service bays.	5051 Quinn Road	0.73	Approved
12	Orange Drive Apartments and Retail	73 units.	APNs: 0133-150-220, -240, -250, and 0133-140-290	1.05	Under Review
13	Chip Seal 2025: Byrnes Road	Chip seal project along Byrnes Road from Hawkins Road to Horse Creek Channel.	Solano County	1.13	Proposed
14	Greentree	909 units.	999 Leisure Town Rd, Vacaville, CA 95687	1.18	Approved
15	Raysons Development	969 units.	APN 0134-290-020	1.31	On Hold
16	Homes2 Suites hotel	Request to construct a four-story, 107-room hotel with 128 parking stalls.	APN 0133-120-380	1.36	Under Construction
17	Donaldson-Ramos Development	2,931 units.	APN 0134-290-030	1.38	On Hold
18	Chip Seal 2025: Fox Road 1	Chip seal project extending south along Fox Road from Weber Road.	Solano County	1.51	Proposed

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
19	Chip Seal 2025: Fox Road 2	Chip seal project extending 1 mile north along Fox Road from Hawkins Road.	Solano County	1.65	Proposed
20	Orion Outdoor Digital Billboard	Request to construct a 65 ft. tall digital billboard located within Solano Irrigation District's right-of-way. The project consists of the installation of a 672 sq. ft. double-sided V-shaped digital display mounted on a brown monopole with drought-tolerant landscaping.	APN 0106-240-430	1.68	Under Review
21	Midway Plaza	Service station, 4,900-sq-ft repair building, 3,000-sq-ft drive-through, 1,900-sq-ft second drive-through.	APN 0106-240-430	1.74	Under Review
22	Chevron Fueling CNG Addition	Add compressed natural gas fueling station with three fueling islands.	151 Crocker Dr, Vacaville, CA 95688	1.79	Under Construction
23	Sunset Banquet Hall Remodel	Modify exterior & interior; add 1,677-sq-ft storage room.	600 Orange Dr, Vacaville, CA 95687	1.86	Under Construction
24	Granite Expo Warehouse	Construct 70,514-sq-ft warehouse + wholesale retail facility.	916 Cotting Ln, Vacaville, CA 95688	1.87	Approved
25	All Weather Architectural Aluminum Expansion	89,100-sq-ft addition to existing facility.	777 Aldridge Rd, Vacaville, CA 95688	1.99	Under Construction
26	Midway Commerce Center	3 industrial buildings totaling ~1.5M sq ft; Buildings A & C built.	APNs 0106-230-900, 910, 920, and 930	2.08	Approved
27	The Father's House Campus Expansion	Construct 20,415-sq-ft addition to existing auditorium.	4800 Horse Creek Dr, Vacaville, CA 95688	2.10	Under Construction
28	Conco Warehouse	415,808-sq-ft warehouse + 6,000-sq-ft office + 421 parking + 120 truck spaces.	APNs 0106-230-680, -740, -750, -760; 0106-240-260, -270, -280	2.14	Under Construction
29	Home Depot Tool Rental Center Expansion	5,000-sq-ft expansion; convert 16 parking stalls to outdoor rental storage/display.	510 Orange Dr, Vacaville, CA 95687	2.16	Complete

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
30	Transwestern Ventures Campus	Three industrial buildings (123k, 127k, 123k sq ft).	APNs 0133-450-020 and 0133-450-030	2.19	Plan Check
31	The Farm at Alamo Creek Specific Plan	Farm: 768 units. Fields: 241 units.	E. of Leisure Town Rd. N. of Elmira Rd, S. of Hawkins Rd. See phases for more detail.	2.29	Farm: Approved Fields: Under Review
32	– The Farm at Alamo Creek	768 units.	APNs 0138-010-110, 0138-010-020	2.29	Approved
33	– The Fields at Alamo Creek	241 units.	APN 0138-010-040	2.29	Under Review
34	Vaca Valley Warehouse Building	Two warehouses: 257,512 sq ft + 169,875 sq ft.	APNs 0133-210-360, 0133-210-370 and 0133-210-570	2.34	Under Construction
35	New Clay Oven Restaurant	Request to demolish the former Black Oak restaurant and construct a new 7,124 sq. ft. building for the Clay Oven restaurant.	320 Orange Dr, Vacaville, CA 95687	2.55	Approved
36	Chevron Hydrogen Fueling Station	Construct hydrogen fueling station at existing Chevron.	299 Orange Drive, Vacaville, CA 95687	2.65	Under Construction
37	Beyond Market & Happy's Car Wash	12,300-sq-ft center incl. convenience store, commercial building, hydrogen/EV fueling, car wash.	APNs 0129-460-010, -020, -030, -050, -060, -070, -080, and -090	2.72	Under Review
38	Valley Strong Credit Union	Request to construct a 1,541 sq. ft. credit union branch, including an 830 sq. ft. drive-up canopy for personal teller deposit and drop-off and ATM access.	APNs 0129-240-280, and -390	2.77	Under Construction
39	Jepson Center	Drive-through facility within new commercial center (gas station & car wash originally proposed).	611 Leisure Town Road, Vacaville, CA 95687	2.89	Under Construction
40	Little Pool House	1 unit.	838 Derry Cir, Vacaville, CA 95688	2.91	Under Construction
41	Union Way Building Antenna	Request to establish a new telecommunication facility on the rooftop of an existing industrial building.	29 Union Way, Vacaville, CA 95687	2.92	Approved

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
42	Vaca Valley Country Club MUP	Minor Use Permit request to convert space into an indoor golf facility.	51 Commerce Place, #C/#D, Vacaville, CA 95687	2.94	Plan Check
43	Mango Materials	Request to construct an approximately 5,000 sq. ft. building at the Easterly Wastewater Treatment Plant. The proposed use would produce biodegradable bio-polymer-based pellets from methane gas.	6040 Vaca Station Road	3.06	Application Incomplete
44	Kairos Charter School	Revise charter campus plan; add 4,320-sq-ft modular building for ~100 students.	850 Sunflower St, Vacaville, CA 95687	3.13	Under Review
45	Elmira Road Industrial Building	Construct 26,180-sq-ft industrial building.	777 Elmira Rd, Vacaville, CA 95687	3.14	Approved
46	Elmira Road Monopine	Construct 85-ft faux-pine cell tower.	777 Elmira Rd, Vacaville, CA 95687	3.14	Complete
47	Roberts' Ranch Specific Plan	Parcel M: 82 units. Village B: 51 units (all built). Village C & L: 146 units. Village D: 46 units. Village F: 55 units. Villages A & E: 150 units. Villages I-K: 250 units.	See individual phases for more details.	3.15	Parcel M: Under Review Village B: Complete (as of 2025) Village C & L: Under Construction Village D: Plan Check Village F: Under Construction Villages A & E: Under Construction Villages I–K: Approved
48	– Roberts' Ranch Parcel M	82 units.	APN 0138-030-200	3.15	Under Review

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
49	– Roberts' Ranch Village B	51 units (all built).	APNs 0138-131-010 through 0138-131-280, 0138-132-010 through 0138-132-120, 0138-133-010 through 0138-133-060, 0138-134-010 through 0138-134-060	3.15	Complete (as of 2025)
50	– Roberts' Ranch Village C & L	146 units.	0138-161-010 through 0138-161-120, 0138-162-010 through 0138-162-040, 0138-163-010 through 0138-163-100, 0138-164-010 through 0138-164-070, 0138-165-010 through 0138-165-160, 0138-166-010 through 0138-166-040, 0138-167-010 through 0138-167-010, 0138-171-010 through 0138-171-020, 0138-172-010 through 0138-172-040, 0138-173-010 through 0138-173-060, 0138-174-010 through 0138-174-050, 0138-175-010 through 0138-175-030	3.15	Under Construction

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
51	– Roberts' Ranch Village D	46 units.	APN: 0138-030-190	3.15	Plan Check
52	– Roberts' Ranch Village F	55 units.	APN: 0138-030-250	3.15	Under Construction
53	– Roberts' Ranch Villages A & E (Wildhawk)	150 units.	0138-030-260, 0138-141-010 through -110, 0138-143-010, 0138-147-010 through -060, 0138-150-010 through -070, 0138-152-010 through -040, 0138-153-010 through -050, 0138-154-010 through -120, 0138-155-010 through -110, 0138-156-010 through -090, 0138-157-010 through -080, 0138-158-010 through -120, 0138-159-010 through -120, 0138-160-010 through -050, 0138-161-010 through -090, 0138-162-010 through -050, 0138-163-010 through -120, 0138-164-010 through -080, 0138-165-010 through -100, 0138-166-010 through -110, 0138-167-010 through -120, 0138-168-010 through -120, 0138-169-010 through -120, 0138-170-010 through -060, 0138-171-010 through -120, 0138-172-010 through -070, 0138-173-010 through -050, 0138-174-010 through -120, 0138-175-010 through -110, 0138-176-010 through -050.	3.15	Under Construction

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
54	– Roberts' Ranch Villages I–K	250 units.	APNs 0138-030-140 through -160	3.15	Approved
55	Nut Tree Apartments	216 units.	APNs 0129-240-570; -580; -590	3.18	Plan Check
56	Nut Tree Business Park	Time extension for two-building business park.	APNs 1029-240-500, 510, 520 and 530	3.22	Plan Check
57	Cheyenne Estates	15 total units; 13 built.	232 Rolling Sage Cir	3.40	Partially Constructed
58	Horse Creek Soccer Field E	New soccer field incl. junior field, landscaping, irrigation.	501 Browns Valley Pkwy, Vacaville, CA 95688	3.43	Approved
59	Tractor Supply Co	Minor Design Review to establish a Tractor Supply Company Store. The proposed project includes interior alterations to provide a general retail display area, office space, and a self-service dog wash area. The project also includes site alterations to convert 30 parking spaces to an enclosed outdoor storage and display area with a propane tank.	128 Browns Valley Pkwy, Vacaville, CA 95688	3.47	Plan Check
60	Allison Apartments	135 total residential units.	APN 0131-030-950	3.57	Approved
61	Homestead (Part of Southwest Dixon Specific Plan (SWDSP))	Village 6: 71 single family lots Village 7: 103 single family lots Village 9: 49 single family lots Village 10: 79 single family lots Village 12/14 (portion): 57 single family lots Village 14 (portion)/15: 59 single family lots Village 15: 107 single family lots	0114-424-010 through -320, 0114-423-010 through -110, 0114-422-010 through -210 0114-421-010 through -120 0114-431-010 through -100 0114-432-010 through -140 0114-433-010 through -140 0114-434-010 through -470 0114-425-010 through -100 0114-426-010 through -050 0114-427-010 through -050	3.65	Village 6: Planning entitlement approved, 62 issued, 9 remaining to issue, 62 permits finalled. Village 7: Planning entitlement approved

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
			0114-428-010 through -030 0114-451-010 through -250 0114-452-020 through -200 0114-472-010, -020, -170 through -200 0114-471-020 through -360 0114-472-030 through -160 0114-434-010 through -310 0114-012-060, 0114-012-090, 0114-012-100, part of APN 0114-012-120		Village 12/14: Planning entitlement approved, anticipate starting construction by late 2025/early 2026 Village 13: Under review, anticipate construction mid-late 2026 Village 14/15: Planning entitlement approved, anticipate starting construction by early 2026. Village 15: Planning entitlement approved, anticipate starting construction by early 2026.
62	Molnar Residence	1 unit.	156 Adrian Ct, Vacaville, CA 95687	3.68	Under Review
63	McMurtry Creek Estates	Construct 24 total residential units.	APNs: 0105-200-140 and 0105-200-150	3.68	Under Review
64	A&P Children	1,005 units.	APN 0137-020-030	3.74	On Hold

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
65	Eleanor Nelson Park Master Plan Modification	Modification to 1986 park plan; new amenities and site layout.	1800 Marshall Rd, Vacaville, CA 95687	3.81	Under Review
66	Callen Street Service Building	Minor Design Review request to construct a 2,640 sq. ft. building for a new trade contractor's shop.	1343 Callen St, Vacaville, CA 95688	3.82	Under Review
67	De Colores Neighborhood Park	Minor Design Review request to construct a new public park behind the Solano County Health and Social Services building. The proposed park would be constructed in two phases and would include a playfield, multipurpose sports court, a 2,500 sq. ft. recreation center, and a 10,000 sq. ft. Housing and Community Services building.	APNs 0129-320-020, -150, -170, -180, -190, -200, -250, -260, and 270	3.90	Plan Check
68	Creekside Mobile Home Park Addition	4 units.	149 Aegean Way, Vacaville, CA 95687	3.99	Approved
69	Happy Home Montessori MUP	Convert 1,899-sq-ft home into preschool (max 30 students).	235 Arrowhead Dr, Vacaville, CA 95687	4.06	Under Construction
70	Vine Tree Estates	28 units.	APN 0129-140-060	4.11	Application Incomplete
71	Harmony Village	10 units.	APN 0129-310-230, -240, -250, -260, -360, -370, and -400	4.11	Approved
72	Cromwell Residence	1 unit.	742 Wesley Ave, Vacaville, CA 95688	4.16	Approved
73	Hearn Residence	1 residential unit; under construction.	4215 Vine Ct, Vacaville, CA 95688	4.22	Complete
74	Vandengate	42 units.	APN 0137-010-140	4.22	Plan Check
75	Vacaville Neighborhood Boys and Girls Club	Minor Design Review request to establish the Vacaville Neighborhood Boys and Girls Club within an existing 13,805 sq. ft. tenant space located at 107 Peabody Road. Interior improvements include	107 Peabody Rd, Vacaville, CA 95687	4.23	Under Review

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
		renovations to create a multipurpose room, three classrooms.			
76	Wilder-Garcia Residence	1 unit.	2030 Pinecrest Ct, Vacaville, CA 95688	4.23	Plan Check
77	Peabody Autobody Perimeter Wall	Construct 7'7" masonry perimeter wall around parking lot.	70 Peabody Rd, Vacaville, CA 95687	4.25	Plan Check
78	Silvey Villas at Homestead Affordable Housing Project	180-unit affordable housing project.	2105 Mourning Dove Dr, Dixon, CA 95620	4.26	Approved
79	Pacheco Ko Residence	1 unit.	2036 Zinfandel Ct, Vacaville, CA 95688	4.27	Approved
80	Vanden Cove	114 units.	APNs 0137-010-050, -060, -070	4.29	Approved (Expires 8-21-26)
81	700 PARC on Main (Site 3)	35 residential units.	APNs: 0130-123-050, 060, 140, 150, 160 and 170	4.34	Plan Check
82	Hampton Inn & Suites	Construct a five-story, 108-room hotel.	1000 Mason St, Vacaville, CA 95688	4.35	Approved (Expires 06-21-2024)
83	Peabody Apartments	120 total units; complete as of June '25	148 Peabody Rd, Vacaville, CA 95687	4.36	Complete
84	Blue Lagoon Brewing Co	Minor Use Permit request to establish a microbrewery and restaurant within an existing 1,500 sq. ft. tenant space.	211 Peabody Rd, Vacaville, CA 95687	4.38	Under Review
85	Brown House	1 unit (plan check).	361 Gibson Canyon Rd, Vacaville, CA 95688	4.42	Plan Check
86	Plaza Court Retail Expansion	3 new retail buildings, totaling 21,000 sq ft on vacant property. No specific users but could include up to 2 drive through building and/or other various regional or neighborhood commercial uses	APNs 0113-490-020 and -030 and 0113-490-150	4.42	Approved
87	700 PARC on Main (Site 1)	Construct 4,000 sq ft commercial space + 25 condos.	APNs 0130-203-150 and 0130-203-160	4.45	Under Construction

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
88	Victory Gardens	206 units. Mutual housing.	5763 Vanden Rd, Vacaville, CA 95687	4.48	Approved
89	Southtown Apartments	236 residential units; all under construction.	APN 0137-030-160	4.48	Plan Check
90	700 PARC on Main (Site 2)	21 residential units.	APN 0130-205-140	4.48	Under Construction
91	Fairmont Square Plaza	2,500-sq-ft drive-through restaurant + renovation of 7,953-sq-ft commercial building.	521 Peabody Rd, Vacaville, CA 95687	4.49	Plan Check
92	Independence in Dixon	Modify project: 93 duplex buildings (186 units) instead of 100 single-family homes.	APN 0108-110-600	4.52	Under Construction
93	SW Dixon – Harvest Property Operable Unit 3-East (OU-3 EAST) Removal Action Work Plan	1,365 total residential units; 450 already built.	APNs 0114-012-010 (portion), 0114-012-050, 0114-012-060	4.52	Approved
94	Creekside Gardens Apartments Addition	4 units.	300 Bel Air Dr, Vacaville, CA 95687	4.52	Plan Check
95	Southtown Phase 3	167 units (118 built, 24 under construction).	APNs 0137-030-040, 0137-030-190	4.55	Under Construction
96	Southtown Phase 3 (Remainder)	75 units.	APNs 137-231-010 through -230 137-232-010 through -090 137-233-010 through -190 137-241-010 through -200 137-242-010 through -260 137-261-010 through -480 137-262-010 through -030 137-262-050 through -080 137-262-090 through -110 137-262-130 through -180 137-271-010 through -060 137-272-010 through -440	4.55	Final Map recorded, no house plan

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
			137-273-010 through -160 137-274-010 through -210		
97	The Learning Experience	Application for development of a 10,000 sq ft building + 12k sq ft play area on 1.11-acre site for use as an early childhood education center.	2000 W A St, Dixon, CA 95620	4.62	Under Review
98	Villages at Vanden Meadows	Village G: 97 units. Village H: 212 units (54 built, 12 under construction, 146 plan check). Village I 1A: 74 units (65 built). Village I 1B: 81 units.	See phases for more detail.	4.64	G: Plan Check H: Under Construction 1A: Complete 1B: Plan Check
99	– Village G – Unit 5	97 units.	APNs 0137-050-290 and 0137-050-300	4.64	Plan Check
100	– Village H – Units 2-4	212 units (54 built, 12 under construction, 146 plan check).	APNs: 0137-311-010 through 0137-311-130 0137-312-010 through 0137-312-290 0137-313-200 through 0137-313-210 0137-314-010 through 0137-314-020 0137-321-010 through 0137-321-360 0137-322-010 through 0137-322-160 0137-323-010 through 0137-323-140 0137-324-010 through 0137-324-080 0137-331-010 through 0137-331-340 0137-332-010 through 0137-332-200	4.64	Under Construction

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
101	– Village I – Unit 1A	74 units (65 built). Note: City says 74 units built, applicant says 65.	APNs: 0137-281-010 through 0137-281-090 0137-282-010 through 0137-282-030 0137-283-010 through 0137-283-060 0137-284-010 through 0137-284-070 0137-285-010 through 0137-285-130 0137-291-010 through 0137-291-080 0137-292-010 through 0137-292-090 0137-301-010 through 0137-301-200	4.64	Complete
102	– Village I – Unit 1B (Sierra Vista)	81 units.	APN 0137-293-010	4.64	Plan Check
103	Elizabeth Street Mixed-Use Building	3 total residential units.	413 Elizabeth St, Vacaville, CA 95688	4.66	Approved
104	Park Parish	21 units.	APN 0137-030-040	4.67	Withdrawn
105	Always Best Care Senior Services	2 total residential units; remodel/reconstruct building to accommodate commercial business.	518 Davis St, Vacaville, CA 95688	4.68	Approved
106	Leisure Town Road Self-Storage & RV Mass Unit Addition	Minor Modification request to add 82 portable premanufactured mass units to the existing self-storage facility located at 201 Leisure Town Road.	201 Leisure Town Rd, Vacaville, CA 95687	4.70	Under Review
107	Boyd Street Duplex	2 units.	406 Boyd St, Vacaville, CA 95688	4.73	Approved
108	Alamo Mixed-Use Development	73 residential units.	APN 0132-320-170-01	4.74	Approved (Expires 03-10-2035)

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
109	Farmstead	130 total units.	APN 0125-040-110	4.83	Under Construction
110	Potter's Court North	18 units.	APN 0136-900-090	4.86	Under Review
111	Harvest At Dixon	Application for General Plan amendment, Pre Zoning, Annexation, Planned Development, Master Plan, Tentative Maps, Design Review and Development Agreement amending General Plan to add properties into City's sphere of influence and Annex development into City for development of up to 6,300 residential units (various densities), 10-15 acre of commercial, parks, public facilities, and other peripheral light industrial uses.	850 acres of farmland, generally, south of Parkway Blvd, West of Perick Rd, East of SR 113 at SE corner of city, outside city limits and city sphere of influence (APN's 0112-080-030, 0112-040-030, -140, -040, -060, -160, and -170, and 0116-020-040, -050, and -230)	4.88	Under Review
112	Chipotle	Approx. 2,325-sq-ft drive-through restaurant.	851 Davis St, Vacaville, CA 95687	4.91	Complete
113	Wastewater Treatment Facility Expansion Project	Expansion of Dixon Wastewater Treatment Facility for buildout projections under Dixon 2040 GP.	APNs 0143-010-050, 0143-010-040, 0143-020-080, 0143-060-060	5.01	Approved
114	Family of Faith Daycare and Preschool	Establish daycare & preschool inside existing community assembly.	350 N Orchard Ave, Vacaville, CA 95688	5.10	Plan Check
115	Bella Vista Storage Addition	Time extension for 6,294-sq-ft one-story storage building.	226 Bella Vista Rd, Vacaville, CA 95687	5.12	Approved
116	Oak Grove Apartments	60 total residential units.	475 W Monte Vista Ave, Vacaville, CA 95688	5.26	Approved
117	North Orchard Oaks Apartments	36 units.	APN 0125-235-430	5.28	Application Incomplete
118	Stratton Estates	Construction of 10 total residential units; 4 built.	607 Shady Glen Rd, Vacaville, CA 95688	5.28	Partially Constructed

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
119	Fire Station No. 71 Telecommunication Facility	Minor Use Permit request to replace an existing flagpole with a Telecommunications Monopine and ground mounted equipment at Fire Station No. 71. The existing flagpole is 47 ft. tall, and the proposal is to replace it with a 55 ft. tall Monopine with an antenna array, which would be designed as a stealth facility.	111 S Orchard Ave, Vacaville, CA 95688	5.31	
120	Foxboro Knoll	58 units (36 built as of June '25 per city).	APN 0137-050-020	5.42	Under Construction
121	Dutch Bros & Multi-Tenant Building	New drive-through Dutch Bros + 5,000-sq-ft commercial building.	1251 Alamo Dr, Vacaville, CA 95687	5.42	Plan Check
122	Nob Hill Estates	Construction of 9 total residential units; 2 already built.	272 Cheyenne Dr, Vacaville, CA 95688	5.44	Partially Constructed
123	Dog Stop Zoning Text Amendment	Zoning Text Amendment and Minor Use Permit requests to allow "Animal Shelter and Boarding" as a conditionally permitted use in the CG (General Commercial) zoning district for the purpose of establishing The Dog Stop within an existing tenant space in The Ranch shopping center.	848 Alamo Dr, Vacaville, CA 95688	5.53	Under Review
124	The Palms	22 total residential units.	240 Butcher Rd, Vacaville, CA 95687	5.59	On Hold
125	Best Western to Fairfield Inn	Demo (e) main building (Best Western) and build new Fairfield by Marriott + Renovate (e) guestrooms be Fairfield. Net addition of 39 rooms for 89 total.	1345 Commercial Way, Dixon, CA 95620	5.69	Under Review
126	Montessa	58 units.	1222 California Dr, Vacaville, CA 95687	5.72	Approved

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
127	Valley of Sacred Heart Academy	Construction of a new two-story, 18,340-square-foot educational center building with associated surface parking and landscaping improvements.	APNs 0115-084-070, -080, -090	5.79	IS/MND filed February 6, 2026
128	Lombardo Ranch	Application for Annexation, Master Plan, Tentative Map, Design Review and Development Agreement for subdivision of 147-acre vacant site (currently used as farm) for development of up to 850 residential units. Submitted in mid-2025 and under review. Will be part of the Harvest at Dixon, SE EIR that will be started shortly as a program level analysis.	APNs 0116-040-060 and -070	5.85	Under Review
129	Baxter Residence	1 unit.	APN 0126-010-110	5.90	Approved
130	Hunt Residence	1 unit.	179 Wykoff Dr, Vacaville, CA 95688	5.95	Approved
131	Arco Gas Station and Convenience Store	Development of new gas station, consisting of a 4,606 sq. ft., 6 pump, fuel canopy, a 3,400 sq. ft. convenience store, and 1,152 sq. ft. car wash on a 1.21-acre lot	APN 0115-050-250	6.04	Under Review
132	Lincoln Square Project	10.99-acre subdivision: 102 single-family homes + 2.27-acre commercial w/ Rotten Robbie, canopy, car wash.	APNs 0108-110-450 and -460	6.65	Approved
133	Dixon 89/Dixon Crossings (Part of Northeast Quadrant Specific Plan)	Planning Application for Development Agreement, Tentative Map and Design Review to subdivide 89 acres into 9 lots and develop 2 industrial buildings (593,000 sq ft and 144,000 sq ft) on 38 acres and conceptual plans for regional commercial development on remaining 47 acres (to study for CEQA purposes).	APN 0111-190-120	6.72	Under Review

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
134	Independence (2.0) East (Part of Northeast Quadrant Specific Plan)	Application for General Plan/Specific Plan/Zoning Map amendments and Development Agreement, Design Review and Tentative Map to change land use from Regional Commercial and Industrial to medium density residential and subdivide and build 220 duplex residential units (in 110 buildings) and other resident serving amenities.	APNs 0111-080-190 and 5 acre portion of 0111-080-290	6.72	Under Review
135	Northeast Quadrant Specific Plan	Dixon Innovation Center: 500,000 sq. ft. industrial buildings Dixon 89/Dixon Crossings: develop 2 industrial buildings (593,000 sq ft and 144,000 sq ft) on 38 acres and conceptual plans for regional commercial development on remaining 47 acres Independence 2.0 East: change land use from Regional Commercial and Industrial to medium density residential and subdivide and build 220 duplex residential units (in 110 buildings) and other resident serving amenities.	APNs 0111-010-070 through 0111-010-080 0111-040-010 through 0111-040-040 0111-050-190 0111-080-050 0111-080-070 through 0111-080-100 0111-080-190 0111-080-220 through 0111-080-250 0111-080-270 through 0111-080-290 0111-190-040 0111-190-070 through 0111-190-090 0111-190-110 through 0111-190-130	6.72	Dixon Innovation Center: Under Review Dixon 89/Dixon Crossings: Under Review Independence 2.0 East: Under Review
136	Dixon Commerce Center Expansion Project	Expansion of warehouse; add 125,712 sq. ft. of new warehouse to south wing.	2299 Commerce Wy, Dixon, CA 95620	6.72	Approved (Expires 6/21/26). Still needs building permits

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
137	– Ascend @ Lagoon Valley	Increase building sizes, footprints, height; relocate planned uses; revise parking & residential counts.	APNs 0128-040-320 through -380	6.73	Approved
138	Lower Lagoon Valley (Ascend, A/B1/C/K1/K2, Welcome, Event Center, Fire Station, Linear Park)	A: 108 units B1: 97 units C: 56 units K1: 88 units K2: 81 units 960 sq. ft. welcoming center Private event center Interim Fire station 8-acre linear private park Water modification for firefighting	See phases for more details.	6.73	A, B1, K1: Under Construction C, K2: Plan Check Welcome Center: Completed Fire Station, event center: Approved Linear Park: under review Water modification: Approved
139	– Lower Lagoon Valley Neighborhood A (Lilac Ridge)	108 units.	APN 0128-040-390	6.73	Under Construction
140	– Lower Lagoon Valley Neighborhood B1 (Rosemary Grove)	97 units.	APN 0128-050-140	6.73	Under Construction
141	– Lower Lagoon Valley Neighborhood C (Manzanita Highlands)	56 units.	APN 0128-050-140	6.73	Plan Check
142	– Lower Lagoon Valley Neighborhood K1	88 units.	APN 0128-040-380	6.73	Under Construction

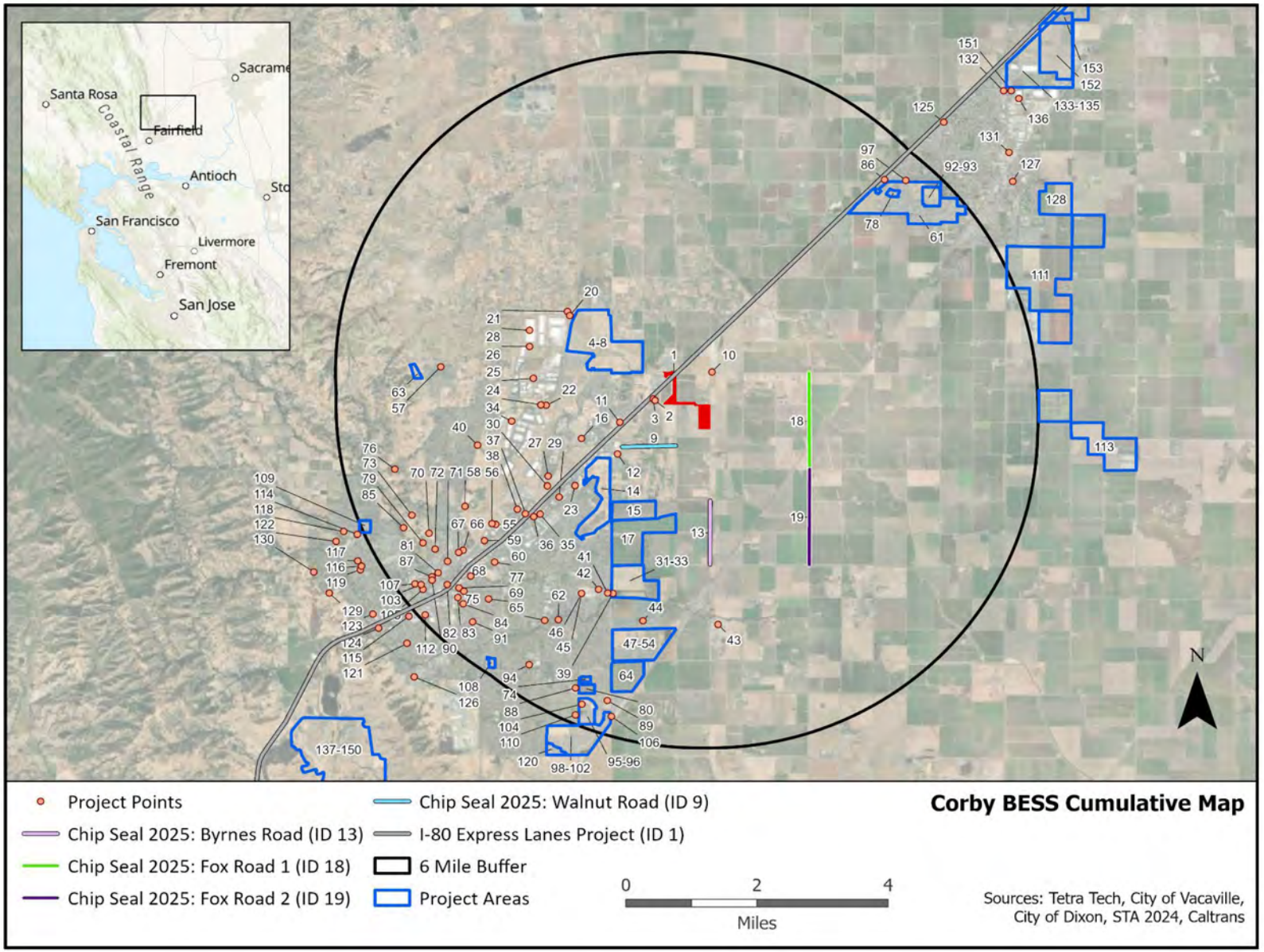
TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
143	– Lower Lagoon Valley Neighborhood K2	81 units.	APN 0128-040-380	6.73	Plan Check
144	– Lagoon Valley Welcome Center	960-sq-ft welcome/marketing center for community.	200 Mount Royal Rd, Vacaville, CA 95687	6.73	Complete
145	– Lower Lagoon Valley Event Center	Request to construct a private Event Center for the Lower Lagoon Valley development area. Amenities include a community room, office, fitness room, banquet room, café, and catering kitchen. Outdoor amenities include 6 pickleball courts, 2 tennis courts, a paseo, and a community farm.	APN 0128-050-140	6.73	Approved
146	– Lower Lagoon Valley Interim Fire Station	Construct interim fire station for Lagoon Valley.	APN 0128-040-330	6.73	Approved
147	– Lower Lagoon Valley Linear Park	Minor Design Review request to construct an 8-acre linear private park nestled between Neighborhoods B, C, and D of the Lower Lagoon Valley Development Area. The private park includes various trails and pathways, decorative stone walls, shade structures and picnic shelters, two play areas, a boardwalk bridge path crossing, a faux dry creek, and pedestrian-level lighting. The private park would be maintained by the Lower Lagoon Valley Homeowners Association.	APN 0128-040-330	6.73	Under Review
148	– Lower Lagoon Valley Temporary Water Modification	Allow temporary vertical construction/water services for fire suppression (temporary tanks).	APNs: 0128-050-070 and 0128-040-330	6.73	Approved
149	– Lagoon Valley Guardhouse	Construct 249-sq-ft guardhouse for community entry.	APN 0128-050-140	6.73	Approved

TABLE A-1 CUMULATIVE PROJECTS LIST

Map Number	Project Name	Description	Location	Distance to Project (miles)	Status
150	– Lagoon Valley Self-Storage	Ten storage buildings + 1,136-sq-ft office + 1,900-sq-ft manager's unit.	5920 Cherry Glen Road	6.73	Under Construction
151	Bank of Stockton Retail Center	3 detached commercial buildings, bank and two restaurant/office buildings. 12,600 sq. ft. on a 2.12 acre	2200 N 1st St, Dixon, CA 95620	6.73	Under Review
152	The Campus Project	Development of around 1,041 residential units (225 high density, and 816 low and medium density residential units) and up to 660,000 R&D/tech/industrial development, and 2-acre commercial site	APN 0111-040-010, -020, 030, -040 and 0111-080-050	7.24	Under Review
153	Dixon Innovation Center (Part of Northeast Quadrant Specific Plan)	Development of around 500,000 sq ft industrial building(s).	Vacant 37.5 acre site on Pedrick Rd, just south of I-80 (APN 0111-010-080)	7.84	Under Review
154	Double T Ranch Quail Canyon	Construct public stable without shows; long-term boarding for up to 48 horses.	8325 Quail Canyon Rd, Vacaville, CA 95688	8.64	Under Review
155	Middle Green Valley Specific Plan	Grazing lands, cultivated areas, vineyards, rural units, winery, barns, fencing, power lines, ponds, reservoir.	North of Fairfield city limits along Green Valley Rd	15.88	Under Review
156	Lantos Energy LLC – Marsalla 1	Drill site + one exploratory natural gas well.	38.133385, -121.898040	17.69	Under Review

Where street addresses not available, APNs were provided.


Sacrame
Santa Rosa
Coastal Range
Fairfield
Antioch
Sto
San Francisco
Livermore
Fremont
San Jose
Project Points
Chip Seal 2025: Byrnes Road (ID 13)
Chip Seal 2025: Fox Road 1 (ID 18)
Chip Seal 2025: Fox Road 2 (ID 19)
Chip Seal 2025: Walnut Road (ID 9)
I-80 Express Lanes Project (ID 1)
6 Mile Buffer
Project Areas
0
2
4
Miles
Corby BESS Cumulative Map
Sources: Tetra Tech, City of Vacaville, City of Dixon, STA 2024, Caltrans
N

Appendix B

Mailing List

Appendix B: Mailing List

The following is the Staff Assessment mailing list for the Corby Battery Energy Storage System Project.

The following is a list of the State agencies that received State Clearinghouse notices and documents:

- California Air Resources Board (ARB)
- California Emergency Management Agency
- California Highway Patrol (CHP)
- California Department of Transportation, District 4
- California Department of Transportation, Planning
- California Department of Conservation (DOC)
- California Energy Commission (CEC)
- California Department of Fish and Wildlife, Region 3 (CDFW)
- California Department of Food and Agriculture (CDFA)
- California Department of Forestry and Fire Protection
- California Native American Heritage Commission (NAHC)
- California Office of Historic Preservation
- California Public Utilities Commission (CPUC)
- California Regional Water Quality Control Board, Region 5 (RWQCB)
- California Natural Resources Agency (CNRA)
- State Water Resources Control Board, Division of Water Quality
- State Water Resources Control Board, Division of Water Rights
- California Department of Toxic Substances Control (DTSC)
- California Department of Water Resources

Table B-1 presents the list of occupants and property owners contiguous to the project site and a list of property owners within 1,000 feet of the project site and 500 feet of project linears.

Table B-2 presents the list of agencies, including responsible and trustee agencies, organizations, and the public libraries.

Table B-3 presents the list of interested parties.

List of California Native American Tribes:

- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Cortina Rancheria - Kletsel Dehe Band of Wintun Indians
- Grindstone Rancheria of Wintun-Wailaki
- Yocha Dehe Wintun Nation

TABLE B-1 OWNERS AND OCCUPANTS OF PROPERTY CONTIGUOUS TO PROJECT SITE OWNERS WITHIN 1,000 FEET OF PROJECT SITE AND 500 FEET OF PROJECT LINEARS

NAME	ADDRESS	CITY	STATE	ZIP
OWNER	3105 CORTE CABRILLO	APTOS	CA	95003
OWNER	3672 CUBRE TER	DAVIS	CA	95616
OWNER	PO BOX 61	YUBA CITY	CA	95992
OWNER	871 COTTING CT STE D	VACAVILLE	CA	95688
OCCUPANT	6796 BYRNES ROAD	VACAVILLE	CA	95687
OWNER	155 CADILLAC DR STE 100	SACRAMENTO	CA	95825
OWNER	700 UNIVERSE BLVD	JUNO BEACH	FL	33408
OWNER	257 ARLINGTON CR	WOODLAND	CA	95695
OWNER and OCCUPANT	5310 KILKENNY RD	VACAVILLE	CA	95687
OWNER and OCCUPANT	5405 KILKENNY RD	VACAVILLE	CA	95687
OWNER and OCCUPANT	6957 BYRNES ROAD	VACAVILLE	CA	95687
OWNER and OCCUPANT	6975 BYRNES ROAD	VACAVILLE	CA	95687
OWNER	103 AEGEAN WAY	VACAVILLE	CA	95687
OCCUPANT	7002 BYRNES ROAD	VACAVILLE	CA	95687
OWNER	PO BOX 3686	YUBA CITY	CA	95992
OWNER	PO BOX 770000	SAN FRANCISCO	CA	94177
OCCUPANT	5157 QUINN ROAD	VACAVILLE	CA	95688

TABLE B-2 AGENCIES, ORGANIZATIONS, AND LIBRARIES

NAME	TITLE	AGENCY	ADDRESS	CITY	STATE	ZIP
JAMES BEZEK	DEPARTMENT DIRECTOR	DEPARTMENT OF RESOURCE MANAGEMENT, SOLANO COUNTY	675 TEXAS STREET, SUITE 5500	FAIRFIELD	CA	94533
ALLAN CALDER	PLANNING MANNAGER	PLANNING, SOLANO COUNTY	675 TEXAS STREET, SUITE 5500	FAIRFIELD	CA	94533
ROBYN RAINS	EMERGENCY SERVICES MANAGER	OFFICE OF EMERGENCY SERVICES, SOLANO COUNTY	530 CLAY STREET	FAIRFIELD	CA	94533
RANDY SHAFER	FIRE CHIEF	FIRE DEPARTMENT OF DIXON	205 FORD WAY	DIXON	CA	95620

TABLE B-2 AGENCIES, ORGANIZATIONS, AND LIBRARIES

NAME	TITLE	AGENCY	ADDRESS	CITY	STATE	ZIP
MATTHEW HOBBS	WATER and POWER MANAGER	SOLANO IRRIGATION DISTRICT	810 VACA VALLEY PKWY, STE. 201	VACAVILLE	CA	95688
SOLANO COUNTY SHERIFF'S OFFICE		SOLANO COUNTY SHERIFF'S OFFICE	530 UNION AVENUE, SUITE 100	FAIRFIELD	CA	94533
DEBORAH BARR	MANAGER OF ENGINEERING	SOLANO COUNTY WATER AGENCY	810 VACA VALLEY PARKWAY, STE. 202	VACAVILLE	CA	95688
ROBERT GUERRERO	INTERIM EXECUTIVE DIRECTOR	SOLANO COUNTY TRANSPORTATION AUTHORITY	423 MAIN STREET	SUISUN	CA	94585
CLIFF HOWARD	PRESIDENT	SOLANO COUNTY FARM BUREAU	130 ALLISON COURT 2-A	VACAVILLE	CA	94585
ELISSA DECARO	PRESIDENT	SOLANO COUNTY HISTORICAL SOCIETY	P.O. BOX 3009	FAIRFIELD	CA	94533
SOLANO PUBLIC HEALTH ADMINISTRATION		SOLANO PUBLIC HEALTH ADMINISTRATION	275 BECK AVENUE	FAIRFIELD	CA	94533
JULIAN CUEVAS	PRESIDENT	DIXON UNIFIED SCHOOL DISTRICT	180 SOUTH FIRST STREET, STE. 6	DIXON	CA	95620
ERIN MORRIS	DIRECTOR OF COMMUNITY DEVELOPMENT	CITY OF VACAVILLE COMMUNITY DEVELOPMENT	650 MERCHANT STREET	VACAVILLE	CA	95688
BRIAN OXLEY	DIRECTOR OF PUBLIC WORKS	VACAVILLE PUBLIC WORKS	650 MERCHANT STREET	VACAVILLE	CA	95688
FRANK DRAYTON	FIRE CHIEF	VACAVILLE FIRE DEPARTMENT	630 MERCHANT STREET	VACAVILLE	CA	95688
ERICK J. FIERRO, Civ, DAF	EXECUTIVE DIRECTOR	TRAVIS AIR FORCE BASE	60 AIR MOBILITY WING 400 BRENNAN CIRCLE	TRAVIS AFB	CA	94535
CHRIS POLEN	POLICE CHIEF	POLICE DEPARTMENT OF VACAVILLE	660 MERCHANT STREET	VACAVILLE	CA	95688
ELIZABETH BUGARIN		ASSOCIATION OF BAY AREA GOVERMENTS	375 BEALE STREET SUITE 700	SAN FRANCISCO	CA	94105

TABLE B-2 AGENCIES, ORGANIZATIONS, AND LIBRARIES

NAME	TITLE	AGENCY	ADDRESS	CITY	STATE	ZIP
ROBBIN BEARD	EXECUTIVE DIRECTOR	MILITARY AVIATION AND INSTALLATION ASSURANCE SITING CLEARINGHOUSE, DEPARTMENT OF DEFENSE, OFFICE OF THE ASSISTANT SECRETARY OF DEFENSE	3400 DEFENSE PENTAGON	WASHINGTON	DC	20301
DAN SHOEMAKER	SPECIALIST	FEDERAL AVIATION ADMINISTRATION, SOUTHWEST REGIONAL OFFICE, OBSTRUCTION EVALUATION GROUP	10101 HILLWOOD PARKWAY	FORT WORTH	TX	76177
MARY PAKENHAM-WALSH	CHIEF, CA DELTA SECTION	U.S. ARMY CORPS OF ENGINEERS	1325 J STREET, ROOM 1640	SACRAMENTO	CA	95814
RYAN OLAH	DIVISION SUPERVISOR	UNITED STATES FISH AND WILDLIFE SERVICE, SACRAMENTO FIELD OFFICE	2800 COTTAGE WAY, ROOM W-2605	SACRAMENTO	CA	95825
MATT LAKIN	ACTING DIRECTOR	UNITED STATES EPA REGION 9	75 HAWTHORNE STREET	SAN FRANCISCO	CA	94105
CHP SPECIAL PROJECTS SECTION		CALIFORNIA HIGHWAY PATROL	P.O. BOX 942898	SACRAMENTO	CA	94298
THOMAS PLENYS	ENERGY (TEAM LEAD)	U.S. EPA, REGION IX, ENVIRONMENTAL REVIEW BRANCH	75 HAWTHORNE STREET	75 HAWTHORNE STREET	CA	94105
GRETCHEN BENNITT	DIRECTOR/APCO	YOLO-SOLANO AQMD	1947 GALILEO COURT, SUITE 103	DAVIS	CA	95618
DAVID EDWARDS	CHIEF DEPUTY DIRECTOR	OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT	1001 I STREET, 19TH FLOOR	SACRAMENTO	CA	95814
MARTHA SANDY, Ph.D.	BRANCH CHIEF	OFFICE OF ENVIRONMENTAL HEALTH HAZARD ASSESSMENT, REPRODUCTIVE AND CANCER HAZARD ASSESSMENT BRANCH	1001 I STREET, 19TH FLOOR	SACRAMENTO	CA	95814
TREVOR BURWELL	PRINCIPAL LAND PLANNER	PACIFIC GAS AND ELECTRIC COMPANY	300 LAKESIDE DRIVE	OAKLAND	CA	94612

TABLE B-2 AGENCIES, ORGANIZATIONS, AND LIBRARIES

NAME	TITLE	AGENCY	ADDRESS	CITY	STATE	ZIP
JAMES BOOTH	DISTRICT CONSERVATIONIST	NATURAL RESOURCES CONSERVATION SERVICES	2337 TECHNOLOGY PKWY., SUITE C	HOLLISTER	CA	95023
VACAVILLE TOWN SQUARE LIBRARY		VACAVILLE TOWN SQUARE LIBRARY	1 TOWN SQUARE PLACE	VACAVILLE	CA	95688
VACAVILLE CULTURAL CENTER LIBRARY		VACAVILLE CULTURAL CENTER LIBRARY	1020 ULATIS DRIVE	VACAVILLE	CA	95687
FAIRFIELD CIVIC CENTER LIBRARY		FAIRFIELD CIVIC CENTER LIBRARY	1150 KENTUCKY ST	FAIRFIELD	CA	94533

TABLE B-3 INTERESTED PARTIES

NAME	TITLE	AFFILIATION	ADDRESS	CITY	STATE	ZIP
ROBERT HOLMES	SENIOR REAL PROPERTY AND PROJECT MANAGER	SOLANO IRRIGATION DISTRICT	810 VACA VALLEY PKWY, STE. 201	VACAVILLE	CA	95688
LAUREN EVANS	LEGAL ASSISTANT	ADAMS BROADWELL JOSEPH & CARDOZO	601 GATEWAY BOULEVARD, SUITE 1000	SOUTH SAN FRANCISCO	CA	94080

Appendix C

Pacific Gas & Electric Company Construction Measures

Appendix C
PG&E Construction Measures
Vaca-Dixon Substation 230kV Generation Transmission Line Interconnection

The following is a summary of best management practices (BMPs) and impact avoidance and minimization measures (AMMs) that PG&E has incorporated into its scope of work and will implement during construction and operation of the interconnection facilities, including installation of new transmission line structures and conductors.

Air Quality

Fugitive Dust – General. Field crews must limit fugitive dust from PG&E project work at all times. Types of work activities where water trucks or other dust abatement methods are typically required include:

- Construction, demolition; excavation; trenching; grading; sand blasting; and other earthmoving activities.

Visible emissions of fugitive dust from PG&E project activities must be maintained within the project boundary. The crew shall abate dust by:

- Applying water to disturbed areas and to storage stockpiles;
- Covering and securing stockpiled soil at the end of each workday;
- Applying water in sufficient quantities to prevent dust plumes during activities such as clearing and grubbing, backfilling, trenching, and other earth moving activities;
- Limit vehicle speed to <15 mph within approved unpaved work areas and along unpaved roads;
- Vehicles and equipment used to transport bulk materials must be wetted, covered, and provide >6 inches of free board (space between top of truck and load) during transport;
- Clean-up track-out at least daily;
- Escalate preventative measures as needed to match conditions
- Consider postponing construction activities during high wind events; and
- The crew shall not generate dust in amounts that create a nuisance to wildlife or people, particularly where sensitive receptors such as neighborhoods, schools, and hospitals are located nearby or down-wind. During inactive periods (e.g., after normal working hours, weekends, and holidays), the crew shall apply water or other approved material to form a visible crust on the soil and restrict vehicle access.

Portable Equipment Registration Program (PERP). PG&E requires that portable engines be registered into the Statewide Portable Equipment Registration Program (PERP) administered by the California Air Resources Board (CARB), if:

- the engine is portable (mounted on a truck, trailer, skids, or wheels);
- the engine is ≥50 brake horsepower (bhp), and;
- the engine does not provide motive force for a vehicle.

Auxiliary engines mounted on vehicles need to be registered if they are ≥50 bhp. For PG&E-owned units, PG&E Environmental Management Air Program is responsible for maintaining valid PERP registration with support from Transportation Services. For rental units, the rental vendor is responsible

for the PERP registration and must provide PG&E with a copy of the current registration, permit, and placard before use.

Standard Requirements:
If a current placard, registration sticker, and registration paperwork are not on the unit, **the crew shall NOT use the piece of equipment, and have it replaced with a unit that is compliant.**
For Rental Units: residence time onsite must be logged upon arrival onsite and upon removal. This record shall be retained and made available for review by the project EFS.

Additional Requirements:

- If the PERP unit is being used to provide primary or supplemental power to a building during an electrical upgrade there is a 90-day limit on the use of PERP.
- If the PERP unit is being used to provide primary or supplemental power to a building for >12 months and an electrical upgrade is not happening a local air district permit is required.
- If the PERP generator is being used for PSPS support in the Yolo-Solano AQMD, a local air district permit will be required.
- If the PERP Unit is being used to replace a failed stationary source generator:
    - a local district notification is required within 72 hours;
    - a Tier 4 Final Engine should be used;
    - and a local district permit may be required in 180 days.

Biological Resources

Swainson's Hawk
Avoid ground disturbing work during nesting timeframes for Swainson's hawks approximately March 1 to August 15.

Bay Area Habitat Conservation Plan Measures
The project is within PG&E's Bay Area Operations and Maintenance Habitat Conservation Plan (BAHCP) Area. Contractors and subcontractors must complete required HCP training via ENVR-0220WBT to work in the HCP Plan Area. Work activities must follow BAHCP Field Protocols (FP) and any additional measures, where identified. If biological issues or concerns arise during work, please contact the PG&E Project Biologist.

- **FP-01 Annual Training.** Hold annual training on habitat conservation plan requirements for employees and contractors performing covered activities in the Plan Area that are applicable to their job duties and work.
- **FP-02 Parking.** Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt).
- **FP-03 Use Existing Roads.** Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation.
- **FP-04 Off Road Access.** Locate off-road access routes and work sites to minimize impacts on plants, shrubs, and trees, small mammal burrows, and unique natural features (e.g., rock outcrops).
- **FP-05 Agency Notification. Biologist, Land Planner, or Crew Lead:** Notify conservation landowner at least 2 business days prior to conducting covered activities on protected lands (state and federally owned wildlife areas, ecological reserves, or conservation areas); more notice will be provided if possible or if required by other permits. If the work is an emergency, as defined in PG&E's Utility Procedure ENV-8003P-01, PG&E will notify the conservation landowner within

48 hours after initiating emergency work. While this notification is intended only to inform conservation landowner, PG&E will attempt to work with the conservation landowner to address landowner concerns.

- **FP-06 Equipment Inspection.** Minimize potential for covered species to seek refuge or shelter in pipes and culverts. Inspect pipes and culverts, of diameter wide enough to be entered by a covered species that could inhabit the area where pipes are stored, for wildlife species prior to moving pipes and culverts. Immediately contact a biologist if a covered species is suspected or discovered.
- **FP-07 Vehicle Speed.** Vehicle speeds on unpaved roads will not exceed 15 miles per hour.
- **FP-08 Trash, Firearms, Fire, Hunting, Pets.** Prohibit trash dumping, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations) at work sites.
- **FP-09 Fire Safety.** During fire season in designated State Responsibility Areas, equip all motorized equipment with federally approved or state-approved spark arrestors. Use a backpack pump filled with water and a shovel and fire-resistant mats and/or windscreens when welding. During fire "red flag" conditions as determined by Cal Fire, curtail welding. Each fuel truck will carry a large fire extinguisher with a minimum rating of 40 B:C. Clear parking and storage areas of all flammable materials.
- **FP-10 Minimize Footprint and Time.** Minimize the activity footprint and minimize the amount of time spent at a work location to reduce the potential for take of species.
- **FP-11 Erosion and Sediment Control.** Utilize standard erosion and sediment control BMPs (pursuant to the most current version of PG&E's *Stormwater Field Manual for Construction Best Management Practices*) to prevent construction site runoff into waterways.
- **FP-12 Stockpile Management.** Stockpile soil within established work area boundaries and locate stockpiles so as not to enter water bodies, stormwater inlets, other standing bodies of water. Cover stockpiled soil prior to precipitation events.
- **FP-13 Trench/Hole Inspection and Escape Ramps.** Fit open trenches or steep-walled holes with escape ramps of plywood boards or sloped earthen ramps at each end if left open overnight. Field crews will search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any wildlife are found, a biologist will be notified and will relocate the species to adjacent habitat or the species will be allowed to naturally disperse, as determined by a biologist.
- **FP-14 Revegetation.** If the covered activity disturbs 0.1 acre or more of habitat for a covered species in grasslands, the field crew will revegetate the area with a commercial "weed free" seed mix.
- **FP-15 Refueling.** Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools, and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas.
- **FP-16 Wetland/Riparian Buffers.** Maintain a buffer of 250 feet from the edge of vernal pools and 50 feet from the edge of wetlands, ponds, or riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will call the PG&E Biologist for further guidance.
- **FP-17 Tree Felling and Removal.** Directionally fell trees away from an exclusion zone if an exclusion zone has been defined. If this is not possible, remove the tree in sections. Avoid damage to adjacent trees to the extent possible. Avoid removal of snags and conifers with basal hollows, crown deformities, and/or limbs over 6 inches in diameter.
- **FP-18 Active Nests.** Nests with eggs and/or chicks will be avoided: contact a Biologist, Land Planner or the Avian Protection Program manager for further guidance.

- **Wetland-2.** Identify wetlands, ponds, and riparian areas and establish buffers. Maintain a buffer of 50 feet around wetlands, ponds, and riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew will implement other measures as prescribed by the biologist or HCP administrator to minimize impacts. These measures include flagging access, requiring foot access, restricting work until the dry season, requiring a biological monitor during the activity, or excavating burrows in ROWs where trenching will occur. Activities must maintain the downstream hydrology to the wetland, pond, or riparian area. Additional minimization measures may be implemented with prior concurrence from USFWS.
- **HCP Administrator Minor New-1.** For minor new construction activities under 2 miles in length, excluding upgrades and replacements, PG&E will notify the USFWS of the anticipated project and provide a summary of the activity. The summary will include information on HCP measures to avoid, minimize and mitigate the effects of the project on covered species, confirm there is adequate take authorization remaining for the covered species, and confirm that activity does not have a reasonably certain likelihood of take of listed non-covered species. If the USFWS has concerns about the work they will notify PG&E within 5 business days and resolve the concerns within 10 days.

Cultural Resources

Historic District. Project components extend to approximately 500 feet east of the Historic District around PG&E's Vaca Dixon Substation. No work shall occur within the Historic District and no modifications of district elements shall occur.

Inadvertent Discovery Protocols. If any new cultural resources are encountered during project activities, all work must be suspended in the vicinity (approximately 100 feet) of the resource and the PG&E Cultural Resources Specialist (CRS) shall be immediately notified. At that time, the PG&E CRS will coordinate any necessary investigations of the site with appropriate specialists, as needed. PG&E may be required to implement protective measures deemed necessary for the protection of the cultural resources.

If significant paleontological resources are discovered during construction activities, the following procedures will be followed:

- Stop work immediately within 100 feet.
- Contact the designated project inspector and Cultural Resource Specialist (CRS) immediately.
- Protect the site from further impacts, including looting, erosion or other human or natural damage.
- The project CRS will arrange for a Principal Paleontologist to evaluate discovery. If the discovery is determined to be significant PG&E will implement measures to protect and document the paleontological resource. Such measures may include preservation in place, excavation, documentation, curation, or other appropriate measures. Permission from the landowner must be secured before treating the fossil. Work may not resume within 100 feet of the find until approval by the paleontologist and CRS.
- In the unlikely event that human remains are encountered (or are suspected) during any project-related activity, and in keeping with the provisions provided in 7050.5 of the CHSC and Public Resource Code 5097.98, if human remains are encountered (or are suspected) during any project-related activity:
    - Stop all work within 100 feet.
    - Immediately contact a PG&E CRS, who will then notify the County Coroner.

- Secure location, but do not touch or remove remains and associated artifacts.
- Do not remove associated spoils or pick through them.
- Record the location and keep notes of all calls and events; and
- Treat the find as confidential and do not publicly disclose the location.

- If the human remains are of Native American origin, the coroner must notify the Native American Heritage Commission within 24 hours of such identification. The most likely descendant shall work with the CRS to develop a program for re-interment or other disposition of the human remains and any associated artifacts. No additional work shall take place within the immediate vicinity of the find until the appropriate actions have been implemented.

Greenhouse Gas Emissions

Greenhouse Gas (GHG) Facility Requirements. If diesel portable engines >50 bhp are operated onsite at a GHG facility subject to the Mandatory Reporting Rule for GHGs (MRR) at any time, the AB617 PERP Log must be completed. Refer to the PERP Engine Tracking Requirements at GHG Reporting Facilities 5MM for details.

Hazardous Materials

Contaminated Soil and Groundwater – None. Based upon a review of information available of the State Water Resource Control Board's (SWRCB) GeoTracker and Department of Toxic Substances Control (DTSC) Envirostor online databases; contaminated soil or groundwater is not anticipated to be encountered during project excavation or soil disturbance. No special soil handling measures are anticipated.

- All PG&E and contractor staging areas not in an established yard or on pavement need Environmental approval prior to establishment. Contact the PG&E Environmental land Planner or Environmental Field Specialist (EFS) for staging area approval.
- The PG&E EFS must be consulted to evaluate spoils prior to third party giveaway or disposal at a landfill.
- Spoils from this project to be transported off-site shall be sampled and analyzed for no less than the following constituents: TPHg+BTEX, TPHd, TPHmo, CAM17.
- Spoils taken directly to a PG&E Spoils Consolidation Yard do not require sampling provided they do not exhibit evidence of contamination or naturally occurring asbestos. Contact the PG&E EFS if you are unsure if you are eligible to utilize the PG&E Spoils Yard(s).
- Wet and dry spoils cannot be mixed and must be managed separately.
- All wet spoils must be stored in water-tight containment to prevent wet spoils or liquids from contacting the ground.
- If during excavation should the soil exhibit contamination (chemical/petroleum odor, discoloration) or contain hazardous materials (paint, lampblack, metal waste or slag) stockpile and segregate the soil and contact the PG&E EFS.
- Surplus spoils (wet/dry) shall only be disposed of PG&E approved landfills listed in **ENV-4000P-01-JA15 'Job Aid- PG&E Authorized Disposal & Recycling Facilities**'.

Hazardous Waste Management

Hazardous Materials Storage. This project may involve the storage of hazardous materials, and they must be managed according to regulations and BMPs.

- All releases of hazardous materials must be immediately addressed. Maintain a spill kit onsite during the length of the project. Contact the PG&E Project Environmental Field Specialist (EFS) for spills of hazardous materials/wastes to determine if agency notifications will be required and/or if additional resources are needed.
- Hazardous materials, greater than 440 lbs. and less than 1,001 lbs. can be transported on PG&E vehicles if the proper MOT shipping paper/MSDS accompanies the load. Contact the Project EFS for additional guidance in these areas.
- All hazardous materials containers must be marked correctly.
- All hazardous materials signs must be displayed as required.
- Non saturated oily rags (to be laundered) stored in non-combustible containers.
- Emergency equipment such as fire extinguisher, eye wash, MSDS, etc. on-site.
- Hazardous material containers must be in good condition.
- All hazardous materials must be compatible with containers.
- Hazardous materials containers are kept closed.
- If there is an unauthorized release of hazardous material, contact your EFS immediately. For after-hours releases contact the Environmental Emergency Hotline at 1-800-874-4043.

Local EFS Notification. Immediately contact the local EFS and stop work if any of the following conditions occur. After hours or if the local EFS is unavailable, please call the Environmental Hotline at 800-874-4043.

- Discharge or spill of hazardous substance;
- If an Environmental Regulator visits the site;
- Visually cloudy/muddy water is observed leaving the work area;
- An underground storage tank is discovered; or
- A subsurface component related to site remediation activities (e.g., monitoring well, recovery well, injection well) is discovered. No subsurface components may be impacted.
- If during excavation unanticipated evidence of contamination is identified (e.g., staining, odors), work must cease and when safe to do so, cover the trench with steel plates. To minimize impacts to public safety and the environment, place contaminated soil on a polyethylene sheet (4 ml) and cover or place the contaminated soil in lined covered containers. Then contact your local/support EFS to determine the next steps.
- If any subsurface components related to site remediation activities (e.g., monitoring well, recovery well, injection well) are discovered in the path of excavation, work must cease in that location and your EFS must be notified to determine the next steps. No subsurface components may be impacted.

Hydrology and Water Quality, Stormwater

Ground Disturbance. The cumulative project disturbance is 0.402 acres, if additional staging is required that is not in an established maintenance yard, on pavement, or in any other location not included in the disturbance acreage above and causes >0.9 acres of cumulative project disturbance, a Stormwater Pollution Prevention Plan (SWPPP) will be required. If a SWPPP is required then no soil disturbance is permitted until a Waste Discharge Identification Number (WDID#) is received from the Central Valley Regional Water Quality Control Board (CVRWQCB), and construction must follow all measures and install all BMPs as required and applicable in the SWPPP.

Stormwater Management. Activity-Specific Erosion and Sediment Control Plans (A-ESCPs) must be followed by crews during construction activities.

- The A-ESCP documents shall be kept on-site by the onsite Construction Representative for the duration of the Project.
- To aid in stormwater compliance assessment, the construction crew is expected to identify changes in access routes or other potential soil disturbing activities, as well as laydown yards/staging areas, and communicate those to the PG&E Environmental Lead as soon as possible prior to the planned start date.
- Notify the PG&E Environmental Lead if the project is expected to begin sooner than originally anticipated.
- BMPs may be installed by the contractor, PM, field crew, or a BMP field crew designated by the PG&E Environmental Field Specialist (EFS)/Water Quality Subject Matter Expert (WQ SME). Please coordinate with the Environmental Lead for direction based on your LOB's direction. The installation of stormwater construction BMPs is required prior to the start of construction activities for the work area.
    - Additional BMPs may be required for temporarily inactive sites and prior to rain events.
    - PG&E's Environmental Management team recommends that native topsoil (0-12 inches) be conserved to maintain the natural seed bank. PG&E topsoil stockpile kits can be made available to construction crews by personnel designated by the WQ SME.
    - Sloped areas may require the installation of biodegradable jute netting and/or slope breaks with biodegradable fiber roll to reduce erosion.
- Construction field crews will be responsible to inspect and maintain stormwater construction BMPs daily throughout the duration of the project. For BMP guidance, please reach out to the PG&E Environmental Lead.
- Non-Biodegradable Stormwater construction BMPs, as well as all equipment and materials, must be removed at the end of the project.
- Biodegradable BMPs may be left in place at the end of the project, as needed.
- Site restoration may be required to close out permits and/or agreements associated with the project.
    - Construction field crews are responsible to complete hardscape restoration (backfill excavations, meet compaction requirements, and complete final paving) prior to demobilization.
    - Construction field crews may be responsible to complete softscape restoration within 14 days following demobilization. If construction field crews need assistance, reach out to the Environmental Lead.
    - Vegetated areas shall be stabilized using a PG&E approved weed-free seed mix. Project-specific seed requirements may be required and should be evaluated by the project biologist.
    - Applicable Stormwater Management A-ESCPs are attached, and include:
        - **Good Housekeeping A-ESCP;**
        - **Pole Replacement A-ESCP,** and
        - **Stockpile Management A-ESCP.**

Construction Dewatering. Dewatering of trenches or excavations may be required, the Environmental Lead/Project EFS shall be notified at least 30 days in advance to ensure the appropriate dewatering methods are used, proper notifications are made, and, if necessary, applicable authorizations/permits are obtained. All dewatering activities must be coordinated through the Environmental Lead/Project EFS throughout the duration of the project.

Five Minute Meeting:

Topic: PERP Engine Tracking Requirements at GHG Reporting Facilities

Date: April 2023

Audience: Gas Transmission Facility Personnel, Environmental Field Specialists

The key thing you need to know:

- Due to a change in regulation by the California Air Resources Board (CARB) in response to Assembly Bill (AB) 617, tracking of ALL diesel PERP engine activity at specific facilities will be required.
- This requirement applies regardless of equipment ownership, permit status, etc.
    - **IF** a portable diesel engine greater than or equal to 50 brake horsepower (bhp) is operated on site at any time
    - **THEN** the emissions must be reported to the local Air District
- In order to facilitate reporting, a portable engine tracking form has been developed to gather the information required to calculate emissions
    - See below “AB617 PERP Log” under “Additional Resources”

Why it matters to you

- If a portable diesel engine is operated at one of the facilities listed below, the AB617 PERP Log MUST be completed so that any associated emissions can be reported to the local Air District:

Tionesta CS	**McDonald Island UGSF**	**Gateway GS**
Burney CS	**Kettleman CS**	**Colusa GS**
Gerber CS	**Hinkley CS**	**Humboldt GS**
Delevan CS	**Topock CS**	

Who do I contact with questions:

- Your local EFS (**GT Facility EFSs Locator**)
- GT Air SME
    - Northern GT Facilities:
      John Mark Pendleton
      J9PB@pge.com
      925-999-6622
    - Southern GT Facilities:
      Ryan Cawdrey
      RYCO@pge.com
      510-414-0015
    - Power Gen:
      Julia Ryan
      jryan@trinityconsultants.com
      269-830-7992

Additional Resources:

- CARB CTR Website
- CARB Final Regulation Order Text
- **PERP Engine Tracking Form:**

AB617 PERP Log v1.00.docx

INTERNAL

“PG&E” refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation. ©2020 Pacific Gas and Electric Company. All rights reserved.

Good Housekeeping

Activity Specific Erosion and Sediment Control Plan
(A-ESCP)

For questions or concerns, please contact your assigned
PG&E Environmental Field Specialist (EFS)

Prepared by:
PG&E Construction Stormwater Group

April 2017

TABLE OF CONTENTS

1.0 WHAT IS GOOD HOUSEKEEPING? 1
2.0 GOOD HOUSEKEEPING PROCEEDURES 1
3.0 INSPECTION AND MAINTENANCE REQUIREMENTS 13
4.0 TROUBLESHOOTING 14
5.0 POST-CONSTRUCTION 15

Attachments

Attachment A **Activity Specific Installation Detail**
GH-01 Typical BMP Use Detail

References

Referenced BMP Fact Sheets

EC-2	Preservation of Existing Vegetation
EC-5	Soil Binders
EC-6	Straw Mulch
EC-7	Geotextiles, Plastic Covers, and Erosion Control Blankets/Mats
EC-16	Non-Vegetative Stabilization
SE-1	Silt Fence
SE-5	Fiber Rolls
SE-6	Gravel Bag Berm
SE-7	Street Sweeping and Vacuuming
SE-10	Storm Drain Inlet Protection
NS-3	Paving and Grinding Operations
NS-9	Vehicle and Equipment Fueling
TC-1	Stabilized Construction Entrance/Exit
TC-2	Stabilized Construction Roadway
TC-3	Tire Wash
WM-1	Material Delivery and Storage
WM-2	Material Use
WM-3	Stockpile Management
WM-4	Spill Prevention and Control
WM-5	Solid Waste Management
WM-6	Hazardous Materials and Waste Management
WM-7	Contaminated Soil Management
WM-8	Concrete Waste Management
WM-9	Sanitary/Septic Waste Management
WM-10	Liquid Waste Management

1.0 WHAT IS GOOD HOUSEKEEPING?

1.1 Introduction

Good Housekeeping includes Best Management Practices (BMPs) to minimize contact of potential pollutants with stormwater, discharge of pollutants to storm drains or surface water, and the contamination of soils at all project sites.

All PG&E Project Teams, Crews, and Subcontractors are **required**
to be familiar with the information contained within this A-ESCP

GOAL: Prevent the discharge of, or soil contamination from, potential pollutants found on construction sites.

1.2 Good Housekeeping Requirements

- This A-ESCP applies to all PG&E construction projects, regardless of size or complexity.
- Know what potential pollutants exist on the site.
- Good Housekeeping must take place year-round.
- Waste must be covered at the end of every day and during rain events.
- Spills must be prevented or cleaned up immediately.

1.3 Planning for success

- Ensure covers are available for any waste.
- Ensure trays are available to prevent spills of potential pollutants.
- Ensure spill kits are available on maintenance trucks and at each site.

2.0 GOOD HOUSEKEEPING PROCEEDURES

The following procedures are intended to prevent the discharge of, or contamination of soil by, construction site pollutants.

The BMPs for the project should be installed in areas similar to those shown on the Typical BMP Use Detail, Attachment A.

2.1 Product and Materials Inventory

Description:

Inventory products and materials that are on-site and are not designed to be outdoors.

Requirements:

- Inventory products and materials. Consider delivery, storage, spill prevention, and cleanup requirements.
- Consider the quantity, physical characteristics (e.g., liquid, powder, solid), and locations of each potential pollutant source handled, produced, stored, recycled, or disposed of at the site.
- Consider the degree to which pollutants associated with those materials may be exposed to and mobilized by contact with storm water.
- Consider the direct and indirect pathways that pollutants may be exposed to storm water or authorized non-storm water discharges.
- Assess past spills or leaks, non-stormwater discharges, and discharges from adjoining areas.
- Retain sampling, visual observation, and inspection records.
- Ensure effectiveness of existing BMPs to reduce or prevent pollutants in storm water discharges and authorized non-storm water discharges.

Associated BMPs and Other Plans:
For additional detail and guidance, refer to the following:

- WM-1 – Materials Delivery and Storage
- WM-2 – Material Use

Figure 1: Materials properly contained

Figure 2: Materials needing covered storage

2.2 Liquid Pollutant Storage

Description:

Implement proper storage, spill prevention, and Spill Kits if there are any of the following on the construction site:

- Petroleum products such as oils, fuels, grease, cold mix asphalt, and tar
- Glues, adhesives, solvents, and cleaning products
- Herbicides, pesticides, and fertilizers
- Paints, stains, and curing compounds
- Vehicle and equipment fluids such as anti-freeze, exhaust fluid, washer fluid, or battery acid
- Soil binders or amendments
- Sewage or line flushing/sanitizing agents
- Other hazardous or toxic substances

Requirements:

- Minimize the amount of hazardous materials stored at the construction site.
- Store hazardous liquids, wastes, and all chemicals in watertight containers with appropriate secondary containment to prevent any spillage or leakage, or in a completely enclosed storage shed.
- Cover all temporary containment facilities prior to forecast rain, at the end of each day, and during non-work days.
- Do not mix waste or hazardous materials. Doing so may complicate or inhibit disposal and recycling options and can result in dangerous chemical reactions.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- NS-9 – Vehicle and Equipment Fueling
- WM-1 – Material Delivery and Storage
- WM-2 – Material Use
- WM-4 – Spill Prevention and Control
- WM-6 – Hazardous Materials/Waste Management
- WM-10 – Liquid Waste Management

Figure 3: Properly contained in secondary containment

Figure 4: Improperly placed and stored on the ground

2.3 Construction Material Storage

Description:

Implement material storage BMPs if any of the following are expected to be on the construction site:

- Asphalt
- Cement
- Dry mix concrete
- Fertilizer, Herbicides, or Pesticides
- Grease
- Soil amendments
- Any other construction materials not designed to be exposed to weather or rain.

Requirements:

- Minimize exposure of construction materials to precipitation. This does not include materials and equipment that are designed to be outdoors and exposed to environmental conditions (i.e. poles, equipment pads, cabinets, conductors, insulators, bricks etc.).

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- Stockpile Management A-ESCP
- WM-1 – Material Delivery and Storage
- WM-2 – Material Use
- WM-3 – Stockpile Management
- WM-4 – Spill Prevention and Control
- WM-6 – Hazardous Materials/Waste Management
- WM-7 – Contaminated Soil Management

Figure 5: Properly wrapped in plastic, on pallet, and on plastic

Figure 6: Improperly placed and stored on the ground

2.4 Tracking Controls

Description:

Implement tracking control BMPs if the following occurs on the construction site:

- Vehicle or equipment traffic to or from a construction, laydown, borrow, disposal, or staging area has the potential to contaminate the vehicle's tires with mud or sediment.
- Connections of non-stabilized access roads or any of the above connect to a paved roadway.
- Internal traffic areas, within a construction site, may lead to sediment laden discharge into storm drain systems or surface waters.

Requirements:

- Use 3" to 6" rock as much as 12" thick in the Construction Entrance to dislodge sediment and contain the sediment within the void areas of the rock.
- Limit traffic to using the entrance at all times. Block all other potential access locations.
- Slope entrance away from the adjoining roadway or provide drainage to prevent stormwater from conveying trapped sediments to the roadway.
- Build entrance with adequate length (50' min), width, (20') and turning radii (25').
- Inspect adjacent roadways daily and sweep or vacuum (SE-7) as needed.
- Include a sediment trap where water runs off of the entrance.
- Maintain the entrance by replacing or freshening rock as needed.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- SE-7 – Street Sweeping and Vacuuming
- SE-10 – Storm Drain Inlet Protection
- TC-1 – Stabilized Construction Entrance
- TC-2 – Stabilized Construction Roadway
- TC-3 – Tire Wash

Figure 7: Effective large angular material

Figure 8: Small ineffective material

2.5 Concrete and Other Rinse and Wash Waters

Description:

Implement proper BMPs if rinsing or washing any of the following is required on the construction site:

- Concrete, stucco, plaster, mortar, grout, tile, or gunite delivery, placement, finishing, pumping, or transporting equipment.
- Paint containers, sprayers, brushes, rollers, mixers, pumps, or cleaning supplies.
- Drywall materials, tools, texture guns and pumps, hoses, and waste.
- Tile mastic, grout, cuttings, or cleaning tools and equipment.
- Construction equipment, vehicles, tools, and materials.
- Cutting, grinding, coring, drilling, or re-finishing of any construction materials using water as a lubricant or coolant.
- Any other materials or equipment that may need to be washed or rinsed.

Requirements:

- Do not allow rinse or wash water to come into contact with the ground or paved surfaces.
- Rinse and wash water shall not be conveyed or dumped into any drain, inlet, or surface water.
- All concrete washout materials, including the water, cement, sand, and gravel shall be disposed of at a proper facility.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- NS-3 – Paving and Grinding Operations
- WM-4 – Spill Prevention and Control
- WM-6 – Hazardous Materials/Waste Management
- WM-8 – Concrete Waste Management
- WM-10 – Liquid Waste Management

Figure 9: Commercially available washout

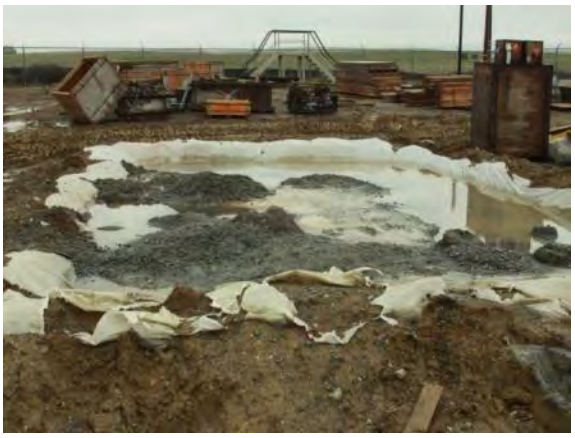


Figure 10: Poorly located, installed, and maintained

2.6 Sanitation Facilities

Description:

Implement appropriate sanitation facility BMPs if the following are located at the construction site:

- Portable toilets
- Sanitary waste storage
- Hand wash stations

Requirements:

- Locate away from drainages and inlets (50’ if possible).
- Provide a tray to contain spills and minor leaks.
- Service and maintain facilities regularly to avoid overuse and overfilling.
- Protect from tipping, especially in high wind areas.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- WM-4 – Spill Prevention and Control
- WM-6 – Hazardous Materials/Waste Management
- WM-9 – Sanitary/Septic Waste Management
- WM-10 – Liquid Waste Management

Figure 11: Properly placed on tray and tied down

Figure 12: Poor location and protection

2.7 Waste Disposal Containers

Description:

Implement appropriate waste disposal BMPs if the following are present at the construction site:

- Construction debris
- Garbage
- Contaminated soil
- Demolition waste
- Concrete, stucco, mortar, drywall, or any other waste

Requirements:

- Cover waste disposal containers at the end of every day and prior to the onset of precipitation.
- Prevent discharges from waste disposal containers to the storm drain system or surface waters.
- Contain and securely protect stockpiled waste materials form wind and rain at all times unless actively being used.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- WM-5 – Solid Waste Management
- WM-6 – Hazardous Materials/Waste Management
- WM-7 – Contaminated Soil Management
- WM-8 – Concrete Waste Management

Figure 13: Large properly covered dumpster

Figure 14: Overused and improperly covered during rain

2.8 Hazardous and Non-Hazardous Spills

Description:

Take appropriate action if the following occur on the construction site:

- Any breach, malfunction, leakage, or spill of a potential pollutant.

Requirements:

- Keep spill cleanup kits on-site and with fueling and maintenance vehicles at all times.
- If safe to do so, stop the spill, and begin cleanup immediately.
- Clean the contaminated area and any soil or materials contaminated by the spill.
- Notify the EFS and project foreman.
- If rain is forecast, cover the spill and contaminated areas prior to the onset of precipitation.
- Clean the spill with absorbents. Do not wash the spill with water.
- Store and dispose of cleanup materials, contaminated materials, and recovered spilled material in accordance with federal, state, can local requirements.

To determine if the spill is reportable, contact the EFS. After hours or if the local EFS is unavailable, call the following 800 number: **800-874-4043.**

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- NS-3 – Paving and Grinding Operations
- NS-9 – Vehicle and Equipment Fueling
- WM-1 – Material Delivery and Storage
- WM-2 – Material Use
- WM-4 – Spill Prevention and Control
- WM-6 – Hazardous Materials/Waste Management
- WM-8 – Concrete Waste Management
- WM-9 – Sanitary/Septic Waste Management
- WM-10 – Liquid Waste Management

Figure 15: Large, hazardous spill

Figure 16: Contaminated soil properly prepared for disposal

2.9 Spill Kits and Clean-up Materials

Description:

Maintain adequate supply of clean up materials if the following are located or performed at the construction site:

- Any construction activity
- Any stored equipment or liquids
- Any equipment or vehicle maintenance, repair, storage, or fueling

Requirements:

- Equipment and materials for cleanup of spills shall be available on site and spills and leaks shall be cleaned up immediately and disposed of properly.
- All personnel must be trained regarding Spill Kit locations, contents, and use.
- Have Spill Kit within reach during activities with potential to release pollutants, such as vehicle and equipment fueling and maintenance.
- All fueling and maintenance vehicles are required to have Spill Kits on board.
- Spill Kits should have a combination of All Absorbent (typically gray) pads and booms to absorb and retain oils, coolants, solvents and water and Oil Only (typically white) booms and pads to absorb only oil along with dry absorbent (kitty litter), gloves, and disposal bags.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- NS-3 – Paving and Grinding Operations
- NS-9 – Vehicle and Equipment Fueling
- WM-1 – Material Delivery and Storage
- WM-2 – Material Use
- WM-4 – Spill Prevention and Control
- WM-6 – Hazardous Materials/Waste Management
- WM-8 – Concrete Waste Management
- WM-9 – Sanitary/Septic Waste Management
- WM-10 – Liquid Waste Management

Figure 17: Typical Spill Kit contents

Figure 18: Hydraulic hose leak and absorbent deployment

2.10 Vehicle and Equipment Storage and Maintenance

Description:

Implement appropriate vehicle and equipment storage and maintenance procedures if there are any of the following on the construction site:

- Any vehicles or equipment being stored, fueled, or maintained.

Requirements:

- Allow only properly maintained vehicles and equipment onto the site.
- Place all equipment and vehicles, which are to be fueled, maintained, or stored in a designated area fitted with appropriate BMPs.
- Clean leaks immediately and properly dispose of leaked material or contaminated soil.
- A Spill Kit should be on each site, on every fueling or maintenance truck, and be easily accessible during fueling or maintenance activities.
- All personnel must be knowledgeable regarding Spill Kit locations, contents, and use.
- Designate one area for fueling and maintenance activities and inspect regularly for spills.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- WM-4 – Spill Prevention and Control
- WM-6 – Hazardous Materials/Waste Management
- WM-10 – Liquid Waste Management
- NS-9 – Vehicle and Equipment Fueling

Figure 19: Generator on secondary containment

Figure 20: Hydraulic tank leaking onto ground

2.11 Airborne Pollution Control

Description:

Implement appropriate airborne pollution control procedures if the following occurs on the construction site:

- Any construction activity with the ability to create any airborne pollution, including:
  - Sediment
  - Nutrients
  - Trash
  - Metals
  - Bacteria
  - Oil and grease
  - Organics

Requirements:

- Control all sources of potential airborne pollutants.
- Provide a water truck on-site during any time there is potential for dust (including winter).
- Cover or wet all stockpiles with potential for wind erosion.
- Respond quickly if dust or airborne pollutants are observed.
- Properly contain trash.

Associated BMPs and Other Plans:

For additional detail and guidance, refer to the following:

- EC-2 – Preservation of Existing Vegetation
- EC-7 – Geotextiles, Plastic Covers, and Erosion Control Blankets/Mats
- EC-16 – Non-Vegetative Stabilization
- NS-3 – Paving and Grinding Operations
- SE-7 – Street Sweeping and Vacuuming
- WM-3 – Stockpile Management
- WM-5 – Solid Waste Management

Figure 21: Water truck filling station

Figure 22: Uncontrolled dust

2.12 Where to Obtain BMP Materials

BMP products in Table 1 can be obtained through PG&E materials warehouses using project order numbers and established materials codes. Should the materials be unavailable from PG&E warehouses, BMP materials and products may be obtained from sources shown below, but may be obtained elsewhere depending on location and urgency of need.

TABLE 1
BMP PRODUCTS INFORMATION

Category	Product Name	Units
Certified Weed-Free Straw Mulch (EC-6)	Weed-Free Straw	Bales
Geotextiles and Mats (EC-7) Geotextile Fabric	Mirafi 600	Rolls: 12.5' x 360' 17.5' x 238'
Geotextiles and Mats (EC-7) Jute Mat	Eco-Jute	Rolls: 4' x 225'
Geotextiles and Mats (EC-7) Plastic Sheeting	Visqueen	Rolls: 20 or 40'x 100'; 10ml thick
Silt Fence (SE-1)	Caltrans Grade Silt Fence	100 feet with 36-inch wood posts at 6 foot spacing
Fiber Roll (SE-5)	Sediment Log Type II	25 foot rolls x 6 or 9" diameter
Gravel Bags (SE-6)	Roc Soc	mono filament
Inlet Protection (SE-10) Gravel Bag	Same as SE-6	
Inlet Protection (SE-10)	Same as SE-5	

Example suppliers include Reed & Graham, White Cap, and Curlex. Other options may include feed stores, retail building supply stores, or hardware stores.

3.0 INSPECTION AND MAINTENANCE REQUIREMENTS

Unless performed by a contractor, BMP installation, inspection, and maintenance will be performed by the PG&E construction crew. BMPs should be inspected daily during construction activities, especially prior to start of any rain event. In the event that BMPs appear to require maintenance or are not functioning as expected, the BMP will be maintained, repaired, or replaced to correct the deficiency.

4.0 TROUBLESHOOTING

Contact the local EFS if any of the following conditions occur:

- Visually cloudy/muddy water is observed leaving the work or staging area;
- Observed sheen, discoloration, foam, odor, or other pollutant indicator;
- Hazardous substance(s) is/are discharged or spilled; or
- There is potential for a non-visible or any other pollutant discharge.

After hours, call: (**800) 874-4043.**

If the project receives a written notice or order from any regulatory agency, immediately contact your local EFS for further direction.

Troubleshooting Guide	
Field Condition	**Common Solutions Are:**
Construction materials on-site	Properly handle, store, and use materials to prevent soil contamination of discharge from site.
Liquid pollutants on-site	Store in watertight container with appropriate secondary containment or in a fully enclosed storage shed. Maintain spill kit.
Dry pollutants on-site	Minimize exposure to precipitation.
Observed spill	Contain spill and clean up contaminants and contaminated soil. Properly dispose of waste. Maintain spill kits on-site.
Potential for tracking to paved surfaces	Install stabilized entrances and implement street sweeping.
Concrete pour	Provide appropriate washout containment and train personnel to wash equipment and tools into the containment BMP.
Concrete cutting or grinding	Use vacuum to collect cuttings or slurry and dispose of properly.
Portable toilets	Locate away from drainages, provide a tray to contain spills and minor leaks, protect from tipping, and service regularly.
Waste generated on-site	Provide waste receptacle (dumpster) adequate in size. Cover all waste containers at end of each day and prior to rain events.
Vehicles and equipment stored on-site	Maintain vehicles and equipment in good working condition. Perform fueling and maintenance activities only in areas fitted with appropriate BMPs. Maintain spill kits in case of spill.
Dust and airborne pollutants	Control all sources of airborne pollutants including trash. Apply water to keep soil moist and reduce any potential for dust.

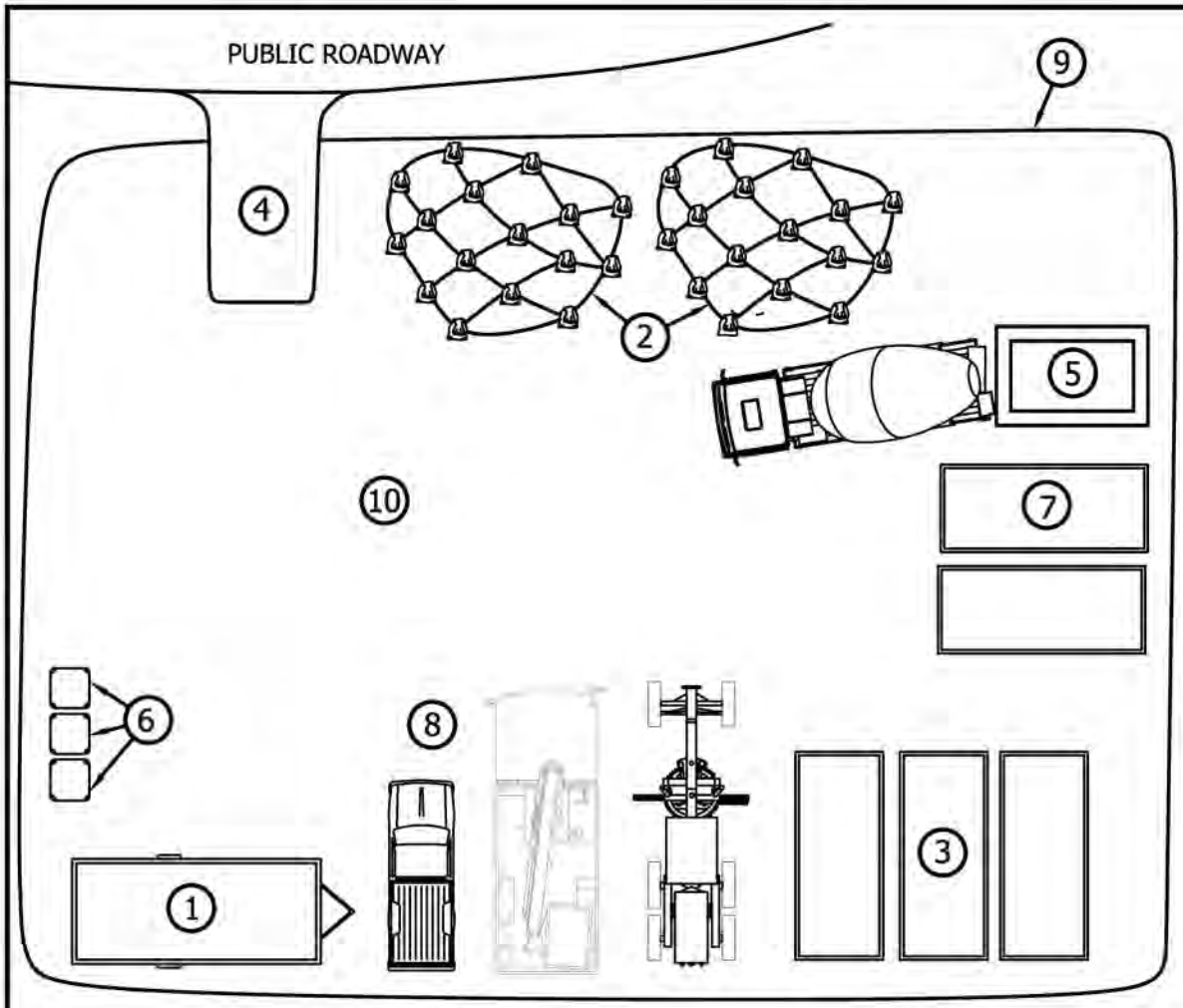
5.0 POST-CONSTRUCTION

Upon completion of construction within the project area:

- Remove all temporary, non-biodegradable BMPs.
- Remove all construction equipment from the site.
- Clear all staging areas of any debris, construction materials, waste, and contaminants.
- Return all drainage ways to their pre-construction line and grade.
- Return all construction site and staging areas to pre-construction or equivalent conditions.
- Cover remaining disturbed soil areas with a combination of temporary cover (mulch) and means to establish permanent vegetative stabilization (seed, fertilizer, soil amendments, etc.).

Attachment A Typical BMP Installation Map

The following installation schematic is included to illustrate installation techniques.



1. CONSTRUCTION TRAILER:
KEEP PRODUCT INVENTORY, SPILL KIT, SDS's, SWPPP OR ESCP AND INSPECTION REPORTS, AND EMERGENCY CONTACT PHONE NUMBERS. REFER TO SECTIONS 2.1, 2.8, AND 2.9

2. COVERED STOCKPILES:
REFER TO STOCKPILE MANAGEMENT A-ESCP.

3. CONSTRUCTION STORAGE CONTAINERS:
KEEP LIQUID POLLUTANTS AND MATERIALS NOT MEANT FOR OUTSIDE STORAGE. ALTERNATIVES INCLUDE STORING SUCH MATERIALS ON SECONDARY CONTAINMENT WITH WEATHERPROOF COVER. REFER TO SECTIONS 2.2 AND 2.3.

4. STABILIZED CONSTRUCTION ENTRANCE
REFER TO SECTION 2.4.

5. WASHOUT
CONCRETE, PAINT, OR OTHER RINSE WATERS. REFER TO SECTION 2.5.

6. SANITATION FACILITIES
REFER TO SECTION 2.6.

7. WASTE DISPOSAL CONTAINERS
REFER TO SECTION 2.7.

8. VEHICLE STORAGE AND MAINTENANCE
REFER TO SECTION 2.10.

9. PERIMETER CONTROL
SILT FENCE (SE-1), FIBER ROLL (SE-5), GRAVEL BAG BERM (SE-6) OR OTHER FUNCTIONING ALTERNATIVE.

10. AIR POLLUTION CONTROL/STABILIZED ROADWAY
CONTROL ALL AIRBORNE POLLUTANTS AT ALL TIMES AND MAINTAIN GRAVEL SURFACE TO SUPPORT CONSTRUCTION TRAFFIC WITHOUT TRACKING OR SEDIMENT LADEN DISCHARGE. REFER TO SECTION 2.11.

NOT TO SCALE

Pacific Gas and Electric Company

TYPICAL BMP USE DETAIL

A-ESCP - GOOD HOUSEKEEPING

GH-01

Pole Replacement

(Rural, Agricultural, and Urban Settings)

Activity Specific Erosion and Sediment Control Plan
(A-ESCP)

For questions or concerns, please contact your assigned PG&E Environmental Field Specialist (EFS)

Prepared by:
PG&E Construction Stormwater Group

April 2017

TABLE OF CONTENTS

1.0 WHAT IS POLE REPLACEMENT?.....1
2.0 POLE REPLACEMENT WATER QUALITY PROCEDURES.....2
3.0 INSPECTION AND MAINTENANCE REQUIREMENTS.....10
4.0 TROUBLESHOOTING 10
5.0 POST-CONSTRUCTION.....11

Attachments

Attachment A Activity Specific Installation Detail
PR-01 Typical BMP Use Detail

References

Referenced Activity Specific Erosion and Sediment Control Plans (A-ESCPs)

GH	Good Housekeeping
SM	Stockpile Management
SP	Sawcutting, Grinding, and Paving
SC	Small Excavation, Construction, and Potholing

Referenced BMP Fact Sheets

EC-2	Preservation of Existing Vegetation
EC-3	Hydraulic Mulch
EC-4	Hydroseed
EC-6	Straw Mulch
EC-7	Geotextiles, Plastic Covers, and Erosion Control Blankets/Mats
EC-16	Non-Vegetative Stabilization
SE-1	Silt Fence
SE-5	Fiber Rolls
SE-6	Gravel Bag Berm
SE-10	Storm Drain Inlet Protection
TC-1	Stabilized Construction Entrance/Exit
TC-2	Stabilized Construction Roadway
WM-2	Material Use
WM-8	Concrete Waste Management
WM-10	Liquid Waste Management

1.0 WHAT IS POLE REPLACEMENT?

1.1 Introduction

Pole placement, construction, demolition, staging, clearing, grading, excavation, and other related project activities associated with pole replacement operations have the potential to release sediment and other pollutants, potentially causing negative impacts to the environment.

All PG&E Project Teams, Crews, and Subcontractors are **required**
to be familiar with the information contained within this A-ESCP

This Activity Specific Erosion and Sediment Control Plan (A-ESCP) sets forth **minimum** Best Management Practices (BMPs) for Pole Replacement at all Pacific Gas and Electric Company (PG&E) construction projects.

GOAL: Prevent the discharge of pollutants and the contamination of soil during pole replacement activities.

If specific environmental concerns are encountered, or if the procedures contained within this A-ESCP prove ineffective, contact your local Environmental Field Specialist (EFS).

1.2 Pole Replacement Requirements

- Have BMP materials on site **before** rain events!
- Water quality protection must take place year-round
- To the extent possible, minimize work activity during rain events
- Perimeter controls must be installed if there is potential for discharge
- Follow the requirements of the:
    - Good Housekeeping A-ESCP
    - Stockpile Management A-ESCP
    - Sawcutting, Grinding, and Paving A-ESCP
    - Small Excavation, Construction, and Potholing A-ESCP
- Refer to the Typical BMP Use Detail in Attachment A for BMP installation guidance.

1.3 Planning for Work Involving Pole Replacement

- This document applies to all PG&E Pole Replacement projects as well as any Pole Replacement being completed as a result of a larger project.
- Tubular Steel Poles (TSP) are not covered under this A-ESCP.
- Light Duty Steel (LDS) poles are treated the same as wood poles and are covered under this A-ESCP.

2.0 POLE REPLACEMENT WATER QUALITY PROCEDURES

Best Management Practices (BMPs)

This A-ESCP specifies appropriate BMPs for all Pole Replacement projects. BMPs include:

- the scheduling of activities,
- prohibitions of practices,
- maintenance procedures, and
- other management practices to prevent or reduce pollutant discharge.

BMPs also include:

- treatment requirements,
- operating procedures, and
- practices to control:
    - site runoff,
    - spills or leaks,
    - sludge or waste disposal, and
    - drainage from raw material storage.

Essential A-ESCPs

All PG&E Projects, Crews, and Subcontractors are required to be familiar with and follow, at a minimum, housekeeping and stockpile management standards as detailed in the Good Housekeeping A-ESCP and Stockpile Management A-ESCP prior to starting work. Good Housekeeping and Stockpile Management A-ESCPs are available on SharePoint. Good Housekeeping and Stockpile Management A-ESCP requirements may apply to all activities within this Plan, and therefore are not mentioned in each subsection.

Related A-ESCPs and BMP Cut-Sheets

A-ESCPs related to this activity are referenced on page i and can be found in the Field Manual. PG&E has detailed Cut-Sheets for specific BMPs which include: when to use the BMP; how to use and install the BMP; and maintenance and inspection guidance for the BMP. BMP Cut-Sheets associated with Pole Replacement are referenced on page i of this A-ESCP and can be found in the Field Manual. The Field Manual is available on SharePoint.

The following activity specific procedures address activities related to any wood or LDS pole replacement activity. Every project may not include all such activities. The project shall follow the procedures that relate to the project.

2.1 Site Access

Description:
Consider site access if any of the following apply to the project:

- Access is not available from an existing stable roadway.
- Soil must be disturbed in order to gain access.
- The existing roadway is not passable without maintenance or additional stabilization.

Requirements:

- Assess available access routes.
- Determine if specialized equipment may allow access without additional grading.
- Ensure all access is either within existing PG&E Easements or Temporary Access Easements have been established.
- Contact the EFS regarding Environmentally Sensitive Area concerns.
- Do not change or alter drainage patterns in any way.
- Provide Stabilized Construction Entrance (TC-1) or Roadway (TC-2) if there is potential for tracking onto roadways.
- Provide sediment control downslope of any soils exposed as a result of site access. Sediment control will typically be Silt Fence (SE-1) or Fiber Rolls (SE-5), but may include Gravel Bag Berms (SE-6) if concentrated flow areas exist.
- If rain is forecast, stabilize project related disturbed soils, as necessary. Soil stabilization may include Stabilized Construction Roadway (TC-2), Non Vegetative Stabilization (EC-16), Straw Mulch (EC-6), or Hydraulic Mulch (EC-3).
- Protect downslope drainage inlets, including culvert inlets, with Gravel Bag Berms (SE-6) and/or Storm Drain Inlet Protection (SE-10), or other effective combination.

Associated BMPs and Other Plans:
For additional detail and guidance, refer to the following:

- TC-1 - Stabilized Construction Entrance
- TC-2 - Stabilized Construction Roadway
- EC-3 – Hydraulic mulch
- EC-6 - Straw Mulch
- EC-16 - Non-Vegetative Stabilization
- SE-1 - Silt Fence
- SE-5 - Fiber Rolls
- SE-6 - Gravel Bag Berms
- SE-10 – Storm Drain Inlet Protection

Figure 1: Access in agricultural environment

Figure 2: Access stabilized after completion

2.2 Site Preparation

Description:
Consider site preparation BMPs if any of the following activities are expected to occur on the project:

- Soil disturbance.
- Sawcutting or grinding.
- Work upstream of an environmentally sensitive area.
- Equipment or materials storage or staging.

Requirements:

- Observe the site and access routes for locations where any pollutant, including sediment, may be discharged.
- Protect existing vegetation to the extent possible.
- Install appropriate perimeter control BMPs, typically Fiber Roll (SE-5) or Silt Fence (SE-1), downslope of any location where activities may lead to any pollutant discharge.
- Protect environmentally sensitive areas, especially those with running or standing surface water (streams, rivers, ponds, marshes, creeks, lakes, wetlands, etc.) with appropriate perimeter control BMPs, typically Fiber Roll (SE-5) or Silt Fence (SE-1).
- Protect downslope drainage inlets, including culvert inlets, with Gravel Bag Berms (SE-6) and/or Storm Drain Inlet Protection (SE-10), or other effective combination.

Associated BMPs and Other Plans:
For additional detail and guidance, refer to the following:

- EC-2 – Preservation of Existing Vegetation
- SE-1 – Silt Fence
- SE-5 – Fiber Rolls
- SE-6 – Gravel Bag Berms
- SE-10 – Storm Drain Inlet Protection

Figure 3: Perimeter control and fencing in place

Figure 4: Perimeter control in place

2.3 Demolition, Dismantling, and Sawcutting

Description:
Consider demolition, dismantling, and sawcutting BMPs if any of the following occurs on the construction site:

- Demolition, dismantling, or removal of any existing poles, related structures or equipment, concrete, pavement, or other existing site material.
- Sawcutting of existing concrete or pavement at the location of the Pole Replacement.

Requirements:

- Follow the practices and procedures included within the Sawcutting, Grinding, and Paving A-ESCP when any sawcutting activity is required.
- Consult the EFS should any substances be observed to be leaking or contributing to an environmentally harmful situation.
- Barricade or cover storm drains with impervious material while performing demolition activities that involve liquid pollutants or chemicals.
- Protect downslope drainage inlets from sediment, including culvert inlets, with Gravel Bag Berms (SE-6) and/or Storm Drain Inlet Protection (SE-10), or other effective combination.

Associated BMPs and Other Plans:
For additional detail and guidance, refer to the following:

- Sawcutting, Grinding, and Paving A-ESCP
- SE-6 - Gravel Bag Berms
- SE-10 – Storm Drain Inlet Protection
- WM-10 – Liquid Waste Management

Figure 5: Dismantling of existing equipment

Figure 6: Proper sawcutting procedure

2.4 Excavation

Description:
Consider excavation BMPs for all excavation activities related to the project, including:

- Pole footing excavation.
- Related utility excavation such as conduits, grounding equipment, or vaults.
- Pole removal and placement excavation.
- Access road excavation.

Requirements:

- Do not place excavated materials in environmentally sensitive areas.
- Protect any environmentally sensitive areas, especially those with running or standing surface water (streams, rivers, ponds, marshes, creeks, lakes, wetlands etc.) with appropriate perimeter control BMPs, typically Fiber Roll (SE-5) or Silt Fence (SE-1).
- Cover or backfill all excavations at the end of each work day.
- Ensure that exposed soil is protected from erosion if rain occurs or is forecast. Typical cover includes Straw Mulch (EC-6) or Erosion Control Blankets (EC-7).
- Protect downslope drainage inlets, including culvert inlets, with Gravel Bag Berms (SE-6) and/or Storm Drain Inlet Protection (SE-10), or other effective combination.

Associated BMPs and Other Plans:
For additional detail and guidance, refer to the following:

- EC-6 – Straw Mulch
- EC-7 – Erosion Control Blankets
- EC-16 – Non-Vegetative Stabilization
- SE-6 – Gravel Bag Berms
- SE-10 – Storm Drain Inlet Protection

Figure 7: Active excavation

Figure 8: Excavation covered for safety at end of day

2.5 Concrete

Description:
Consider concrete BMPs for use during pole installation activities that include the following:

- Concrete replacement.
- Any other cement based product use.

Requirements:

- Cover or barricade storm drains within reasonable proximity to the work area.
- Re-schedule concrete work when rain is forecast.
- Avoid mixing or ordering excess amount of concrete.
- Do not wash equipment or any concrete materials into footing excavations.
- Do not allow excess concrete to be dumped onsite, except in appropriate washout facilities.

Associated BMPs and Other Plans:
For additional detail and guidance, refer to the following:

- Sawcutting, Grinding, and Paving A-ESCP
- NS-3 – Paving and Grinding Operations
- WM-2 – Material Use
- WM-8 – Concrete Waste Management

Figure 9: Sidewalk Repair

Figure 10: Concrete placement

2.6 Site Stabilization

Description:
Consider site stabilization BMPs if the following occur on the construction site:

- Disturbance of soil.

Requirements:

- Upon completion of the Pole Replacement, stabilize all project related disturbed soils to return the area to pre-project condition which may include pavement, concrete, gravel/rock, landscaping, soil cover, seeding, or agricultural conditions.
- Cover disturbed soil areas with a combination of temporary cover (mulch) and means to establish permanent vegetative stabilization (seed, fertilizer, soil amendments, etc.).
- Soil stabilization may be in the form of Erosion Control Blankets (EC-7), Straw Mulch (EC-6), Hydraulic Mulch (EC-3), and/or Hydroseed (EC-4).
- Install biodegradable fiber rolls and blankets to protect against any transport of sediment offsite or to environmentally sensitive areas.
- Some projects require stabilization on non-PG&E property. The landowner may request that PG&E does not re-stabilize the disturbed soil. In an effort to avoid conflicts with landowners, property specific agreements can be established. These agreements will be coordinated by the PG&E Land Agent.

Associated BMPs and Other Plans:
For additional detail and guidance, refer to the following:

- Sawcutting, Grinding, and Paving A-ESCP
- EC-3 – Hydraulic Mulch
- EC-4 - Hydroseed
- EC-6 - Straw Mulch
- EC-7 - Erosion Control Blankets
- EC-16 - Non-Vegetative Stabilization
- TC-2 - Stabilized Construction Roadway

Figure 11: Stabilized soil with perimeter treatment

Figure 12: Stabilized disturbed soil

2.7 Where to Obtain BMP Materials

BMP products in Table 1 can be obtained through PG&E materials warehouses using project order numbers and established materials codes. Should the materials be unavailable from PG&E warehouses, BMP materials and products may be obtained from sources shown below, but may be obtained elsewhere depending on location and urgency of need.

TABLE 1
BMP PRODUCTS INFORMATION

Category	Product Name	Units
Vegetation Protection Fencing (EC-2)	Orange Plastic Fence	
Certified Weed-Free Straw Mulch (EC-6)	Weed-Free Straw	Bales
Geotextiles and Mats (EC-7) Geotextile Fabric	Mirafi 600	Rolls: 12.5' x 360' 17.5' x 238'
Geotextiles and Mats (EC-7) Jute Mat	Eco-Jute	Rolls: 4' x 225'
Geotextiles and Mats (EC-7) Jute Mesh	jmesh-4225	4'x225' (staples required)
Geotextiles and Mats (EC-7) Plastic Sheeting	Visqueen	Rolls: 20 or 40'x 100'; 10ml thick
Silt Fence (SE-1)	sfo-b-6	100 feet with 36-inch wood posts at 6 foot spacing
Fiber Roll (SE-5)	Sediment Log Type II	25 foot rolls x 6 or 9" diameter
Fiber Roll (SE-5) Animal Friendly Wattle	BioFiber Roll	8"x12' or 8"x24' (wood stakes required)
Fiber Roll (SE-5) HDPE Wattle	ERTEC ProWattle	5" x 7' (wood stakes and rebar j-hooks required at 5' spacing)
Gravel Bags (SE-6)	Roc Soc	mono filament
Inlet Protection (SE-10) Gravel Bag	Same as SE-6	
Inlet Protection (SE-10) Fiber Roll	Same as SE-5	
Inlet Protection (SE-10) Filter Guard	ERTEC Gr8 Guard	Each (UV stable zip ties required)
Inlet Protection (SE-10) Hard Surface Guard	Product #344321	6.5" x 7' (nails with pre-mounted steel washers required)

Example suppliers include Reed & Graham and White Cap. Other options may include feed stores, retail building supply stores, or hardware stores.

3.0 INSPECTION AND MAINTENANCE REQUIREMENTS

- It is required that at a minimum, work be inspected weekly, prior to forecast rain events, daily during extended rain events, and after the conclusion of rain events.
- During certain conditions it may be necessary to inspect work areas more frequently (for example, high winds or extreme heat).
- Repair, re-apply, and/or replace BMPs as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the perimeter control height.
- If spilled or leaking materials are discovered, implement appropriate spill control equipment and procedures to completely clean up the potential pollutant to prohibit additional soil contamination or pollutant discharge from the site. If the extent of the impact of the pollutant is unknown, contact your EFS as soil testing may be necessary.

4.0 TROUBLESHOOTING

Contact your local EFS if any of the following conditions occur:

- Visually cloudy/muddy water is observed leaving the work area;
- Observed sheen, discoloration, foam, odor, or other pollutant indicator;
- Hazardous substance(s) is/are discharged or spilled; or
- There is potential for a non-visible or any other pollutant discharge.

After hours, call: **(800) 874-4043.**

If the project receives a written notice or order from any regulatory agency, immediately contact your local EFS for further direction.

Troubleshooting Guide	
Field Condition – Site Access	**Common Solutions Are:**
Access not available from existing stable roadway.	Assess available routes and specialized equipment options.
Access not available within existing easements.	Obtain proper permissions for accessing work areas.
There is potential for tracking to roadways.	Install stabilized entrance.
There is rain in the forecast.	Stabilize exposed soil areas.
Field Condition – Site Preparation and Excavation	**Common Solutions Are:**
Soil must be disturbed.	Protect existing vegetation, install perimeter control, protect environmentally sensitive areas, protect downslope drainages and inlets.

Troubleshooting Guide	
Excavation is necessary.	Do not place excavated materials in environmentally sensitive areas. Cover excavations at the end of the work day. Implement the Stockpile Management A-ESCP for stockpiled materials.
Field Condition – Demolition, Dismantling, and Sawcutting	**Common Solutions Are:**
Sawcutting or Grinding is required.	Follow requirements of the Sawcutting, Grinding, and Paving A-ESCP.
Equipment is observed to be leaking or a spill occurs.	Deploy spill absorbent materials if safe and contact the EFS if a discharge occurs.
Facilities that contain liquid pollutants or chemicals are to be demolished or dismantled.	Barricade or cover storm drain inlets and discharge points.
Field Condition – Concrete Placement	**Common Solutions Are:**
There are drain inlets close-by.	Cover or barricade inlets to prevent discharge.
Rain is forecast.	Re-schedule work for a day without rain.
Tools and equipment are in need of washing or rinsing.	Provide appropriate concrete washout tub and properly dispose of rinsed material.
Field Condition – Site Stabilization	**Common Solutions Are:**
Work is complete.	Remove all temporary BMPs, stabilize all exposed soil areas, and remove all construction equipment, materials, and waste from the site.

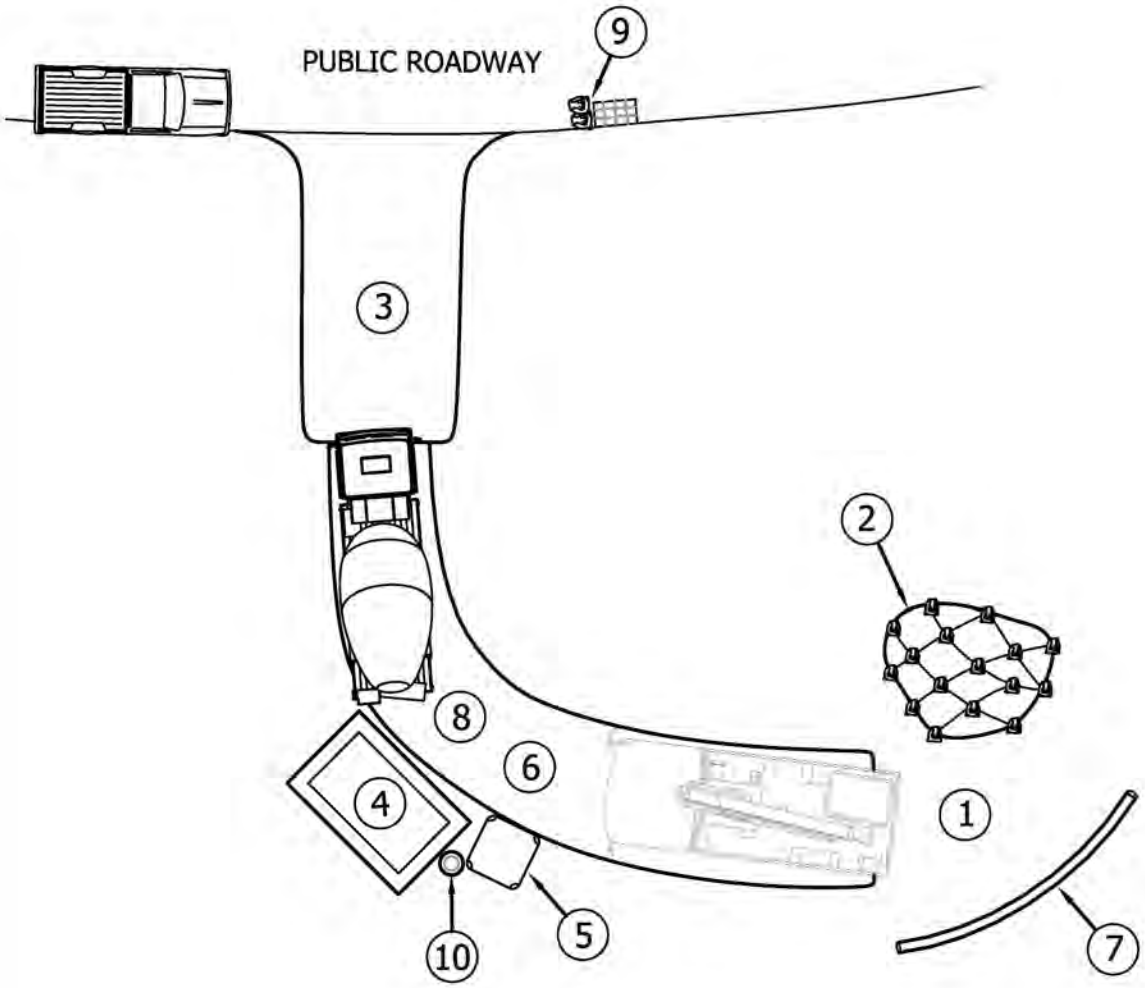
5.0 POST-CONSTRUCTION

Upon completion of construction within the project area:

- Remove all temporary, non-biodegradable BMPs.
- Remove all construction equipment from the site.
- Clear all staging areas of any debris, construction materials, waste, and contaminants.
- Return all drainages to their pre-construction line and grade.
- Return construction sites and staging areas to pre-construction or equivalent conditions.
- Cover remaining disturbed soil areas with a combination of temporary cover (mulch) and means to establish permanent vegetative stabilization (seed, fertilizer, soil amendments, etc.).

Attachment A Activity Specific Installation Details

The following installation details are included to illustrate installation techniques. Specific installation of any BMP must consider the restrictions of the installation site and that modifications may be required given local conditions.



NOTES:

1. POLE REPLACEMENT LOCATION
STORE OR STAGE TREATED POLES ON STRINGERS (NOT ON GROUND)

2. COVERED STOCKPILES
REFER TO STOCKPILE MANAGEMENT A-ESCP

3. STABILIZED CONSTRUCTION ENTRANCE
USE IF NECESSARY

4. WASHOUT
CONCRETE, PAINT OR OTHER RINSE WATERS
REFER TO GOOD HOUSEKEEPING A-ESCP

5. SANITATION FACILITIES
REFER TO GOOD HOUSEKEEPING A-ESCP

6. STABILIZED CONSTRUCTION ROADWAY
REFER TO SECTION 2.1

7. PERIMETER CONTROL, DOWNSLOPE OF EXPOSED SOIL
SILT FENCE (SE-1), FIBER ROLL (SE-5), OR GRAVEL BAG BERM (SE-6)

8. AIR POLLUTION CONTROL
CONTROL AIRBORNE POLLUTANTS AT ALL TIMES AND MAINTAIN ROAD SURFACE TO SUPPORT CONSTRUCTION TRAFFIC WITHOUT TRACKING OR SEDIMENT LADEN DISCHARGE

9. STORM DRAIN INLET PROTECTION (SE-10)

10. SPILL KIT
REFER TO GOOD HOUSEKEEPING A-ESCP

NOT TO SCALE

Pacific Gas and Electric Company

TYPICAL BMP USE DETAIL

A-ESCP - POLE REPLACEMENT

PR-01

Stockpile Management

Activity Specific Erosion and Sediment Control Plan
(A-ESCP)

For questions or concerns, please contact your assigned PG&E Environmental Field Specialist (EFS)

Prepared by:
PG&E Construction Stormwater Group

March 2017

TABLE OF CONTENTS

1.0 WHAT IS STOCKPILE MANAGEMENT? 1
2.0 STOCKPILE MANAGEMENT PROCEDURES 2
3.0 INSPECTION AND MAINTENANCE REQUIREMENTS 5
4.0 TROUBLESHOOTING 6
5.0 POST-CONSTRUCTION 8

Attachments

Attachment A Activity Specific Installation Details
SP-01 Typical Stockpile Placement
SP-02 Hydraulic Stabilization
SP-03 Typical Plastic or Fabric Cover Restraints

References

Referenced BMP Fact Sheets

EC-3 Temporary Hydraulic Mulch
EC-5 Soil Binders
EC-6 Straw Mulch
EC-7 Geotextiles, Plastic Covers, and Erosion Control Blankets/Mats
EC-9 Earth Dikes and Drainage Swales
SE-1 Silt Fence
SE-5 Fiber Rolls
SE-6 Gravel Bag Berm
TC-1 Stabilized Construction Entrance/Exit
TC-2 Stabilized Construction Roadway
WE-1 Wind Erosion Control
WM-3 Stockpile Management
WM-5 Solid Waste Management
WM-7 Contaminated Soil Management
WM-8 Concrete Waste Management

1.0 WHAT IS STOCKPILE MANAGEMENT?

1.1 Introduction

Stockpile management includes Best Management Practices (BMPs) to minimize erosion and sediment transport originating from stockpiles.

All PG&E Project Teams, Crews, and Subcontractors are **required** to be familiar with the information contained within this A-ESCP

Stockpiles may include, but are not limited to, the following materials: soil, aggregate base, construction debris, demolition debris, any metal debris, or a combination thereof.

GOAL: Prevent rainfall from contacting stockpile materials and transporting sediment and other pollutants offsite or to surface waters.

Sediment in stormwater is pollution!

1.2 Requirements for All Stockpiles

- Have BMP materials on site **before** rain events!
- Stockpile protection must take place year-round
- Perimeter controls must be installed around stockpiles (may include earthen berms, straw wattles, or silt fence)
- Cover soil stockpiles with soil binders (such as Gorillasnot) or plastic sheeting
- Locate stockpile away from drainage systems such as swales and drainage inlets

1.3 Planning for Work Involving Stockpiles

- If using soil binders, ensure binders and a water source are present on site at all times during the project including a water truck or water buffalo used to spray the stockpiles.
- If using plastic sheeting, ensure plastic sheeting and associated tie down materials are available on site at all times.

1.4 Definitions

High Risk Stockpiles Specific types of stockpiles that require additional protection because they contain any of the following materials: contaminated soil (TPH, PCBs, etc.), Portland cement, concrete rubble, fly ash, stucco, hydrated lime, and cut back or cold mix asphalt. Specific management for these and similar materials are located in Section 2.2.

Active Stockpiles Active stockpiles are defined as scheduled to be used or accessed within 14 days.

Inactive Stockpiles If a pile is not scheduled to be used within 14 days, it immediately becomes inactive and must be stabilized.

Soil Binders Soil binders are glue-like products sprayed onto soil stockpiles and is the preferred

method to stabilize stockpiles. Soil binders may be combined with hydromulch per the manufacturer's specifications. Many soil binders require a minimum curing time to be fully effective and typically need at least 24 hours to cure prior to a rain event. Do not use soil binders within 100' of any surface water source, including diches and storm drain inlets without contacting your assigned EFS.

Plastic Sheeting Plastic sheeting is a rolled product held down using ropes or other means to cover stockpiles. Plastic sheeting should be avoided when possible as it is hard to manage, increases runoff, breaks down quickly in sunlight, and can become airborne during high winds causing damage to power lines and other substation equipment.

2.0 STOCKPILE MANAGEMENT PROCEDURES

The following procedures are intended to address activities related to most stockpile management situations. Although your project may not include all such activities, the project shall follow the procedures contained within this section that apply to your project.

2.1 Active and Inactive Stockpiles

Requirements:

- Inactive stockpiles must be stabilized **at all times.**
- All active stockpiles must be stabilized prior to and during a rain event

Protect From Rain

- Stockpiles must be stabilized to protect from rainfall (splash) erosion, and surface flow erosion.
- Stabilization materials include:
    - Soil Binders (EC-5), or combined with Temporary Hydraulic Mulch (EC-3) if necessary
    - Plastic Covers (EC-7)
    - Erosion Control Blankets (EC-7)

Stockpile Perimeter Controls

- All stockpiles should be protected with perimeter controls such as:
    - Silt Fences (SE-1)
    - Fiber Rolls (SE-5), commonly called Straw Wattle
    - Gravel Bag Berms (SE-6)
    - Earth Dikes and Drainage Swales (EC-9)
- Provide a minimum 50' separation from concentrated flows of stormwater, drainage courses, and storm drain inlets. If space is limited to less than 50', provide additional diversion or protection adjacent to the concentrated flow.

Protect From Wind

- In windy areas for stockpiles susceptible to wind erosion, stockpiles should be securely and temporarily stabilized at the end of every day, and kept wet during working hours to minimize wind erosion. **Do not apply so much water that runoff occurs.**
- Consider if plastic sheeting may come into contact with electrical equipment if it dislodges from the stockpile, and use alternatives if necessary.

Example Photos

Figure 1. Cover pulled back for access during use

Figure 2. Soil binder and mulch application prior to rain

Figure 3. Stockpile stabilized with soil binder and temporary hydraulic mulch

Figure 4. Stockpile stabilized with erosion control blanket

2.2 High Risk Stockpiles

Description:

High risk stockpiles may include visible and non-visible pollutants including, but not limited to:

- Concrete (pH and metals) and asphalt (petroleum) rubble
- Contaminated soil (TPH, PCBs, etc.)
- Cold mix asphalt, aka “cut-back” (petroleum based contaminates)
- Hazardous construction materials
    - Construction waste such as retired transformers
    - New construction materials waiting for installation such as liming agents or gypsum
- Treated wood waste (TWW)
- Soil amendments
    - Fly ash or Hydrated lime
- Fertilizers (ammonium nitrate, urea, anhydrous ammonia, etc.)

Requirements:

High risk stockpiles require additional considerations, some of which include:

- Placing stockpiles in areas that will not have any run-on. If such a location is unavailable, protect from run-on using a diversion ditch or gravel bag berm;
- Containing any possible run-off from the pile by creating a berm or basin to collect stormwater runoff downslope of the stockpile;
- Containing any runoff from piles likely to include non-visible pollutants prior to leaving the project site. If run-off cannot be contained, contact the EFS and collect samples of the runoff for laboratory analysis;
- Bagging and placing contaminated materials on pallets to be stored under cover until they can be moved to a legal collection facility, if possible; and
- Place stockpile on an impervious surface such as pavement, trench plate, or plastic sheeting.

Example Photos

Figure 5. Contaminated stockpile under cover

Figure 6. Concrete rubble stockpile in need of cover

2.3 Where to Obtain BMP Materials

BMP products should be obtained through PG&E materials warehouses using project order numbers and established materials codes. Should the materials be unavailable from PG&E warehouses, BMP materials and products shown below can be obtained from sources shown, but may be obtained elsewhere depending on location and urgency of need.

TABLE 1
BMP PRODUCTS INFORMATION

Category	Product Name	Units
Hydraulic Mulch (EC-3)	Flexterra FGM	Bales
Soil Binders (EC-5)	Soiltac, Gorillasnot	5 gallon buckets
Straw Mulch (EC-6)	Certified Weed-Free Straw	Bales
Geotextiles and Mats (EC-7) Geotextile Fabric	Mirafi 600	Rolls: 12.5' x 360' 17.5' x 238'
Geotextiles and Mats (EC-7) Jute Mat	Eco-Jute	Rolls: 4' x 225'
Geotextiles and Mats (EC-7) Plastic Sheeting	Visqueen	Rolls: 20 or 40'x 100'; 10ml thick
Silt Fence (SE-1)	Caltrans Grade Silt Fence	100 feet with 36-inch wood posts at 6 foot spacing
Fiber Roll (SE-5)	Curlex Sediment Log Type II	25 foot rolls x 6" or 9" diameter
Gravel Bags (SE-6)	Roc Soc or Monofilament Bags	Each
3/8" Nylon Rope	3/8" Nylon Rope	100' or 500'

Example suppliers include Reed & Graham, White Cap, and Curlex. Other options may include feed stores, retail building supply stores, or hardware stores. If you are still having trouble contact your project EFS for assistance.

3.0 INSPECTION AND MAINTENANCE REQUIREMENTS

- It is required that at a minimum, active stockpiles be inspected weekly, prior to forecast rain events, daily during extended rain events, and after the conclusion of rain events.
- During certain conditions it may be necessary to inspect stockpiles covered with plastic sheeting or rolled product more frequently (for example, high winds or extreme heat).

- Repair, re-apply, and/or replace linear sediment barriers, stabilization, and/or covers as needed to keep them functioning properly.
- Sediment shall be removed when it reaches one-third of the perimeter control height.
- Contaminated soil stockpiles or stockpiles with the potential to discharge visible and/or non-visible pollutants offsite should be inspected for signs of potential contaminate or pollutant discharge.
    - Should a discharge be observed that is likely to contain pollutants, notify the EFS for sampling requirements.
- If spilled or leaking hazardous materials contact soil stockpiles, implement appropriate spill control equipment and procedures to completely clean up the pollutant to prohibit additional soil contamination or pollutant discharge from the site. If the extent of the impact of the pollutant is unknown, contact your EFS as soil testing may be necessary.

4.0 TROUBLESHOOTING

Contact your local EFS if any of the following conditions occur:

- Visually cloudy/muddy water is observed leaving the work area;
- Observed sheen, discoloration, foam, odor, or other pollutant indicator;
- Hazardous substance(s) is/are discharged or spilled; or
- There is potential for a non-visible or any other pollutant discharge.

After hours, call: **(800) 874-4043.**

If the project receives a written notice or order from any regulatory agency, immediately contact your local EFS for further direction.

Troubleshooting Guide	
Field Condition – Stockpile Management	**Common Solutions Are:**
Soil stockpile erodes	Cover stockpile with plastic sheeting or spray with a soil stabilizer. Protect with a temporary perimeter sediment barrier around the stockpile
Stockpile is in flow line	Remove stockpile from drainage path or protect with a berm, dike, or temporary diversion device
Storm water run-on impacts the stockpile	Protect the stockpile by using temporary perimeter sediment barriers such as berms, dikes, silt fencing, or sandbags
Wind causes erosion and or blowing dust	Cover stockpile or spray with a soil stabilizer. Use a water application to suppress dust
Field Condition – Soil Binders	**Common Solutions Are:**
Slope was improperly dressed before application	Roughen embankment and fill areas by rolling with a crimping or punching type roller or track walking where rolling is impractical. Pre-wet the areas of application.

Troubleshooting Guide	
Coverage is inadequate	Follow recommended application rates. Count the number of bags of the product to ensure the correct amount of material is implemented. Reapply to the areas
Sprayed areas degrade or become ineffective	Follow recommended application rates. Consider other or additional BMPs. Reapply binder as necessary
Sprayed slope has spot failures	Repair slopes and re-spray damaged areas
Portions of the sprayed area have been disturbed	Keep workers and equipment off sprayed areas. Repair and re-spray areas that have been damaged
Binder fails to penetrate soil	Roughen soil and pre-wet to manufacturer's recommendations. Reapply to areas where necessary
Soil binder is washed off slope	Allow at least 24 hours for the materials to dry before a rain event. Follow manufacturer's recommendations. Reapply as necessary
Excessive water flows across stabilized surface.	Use other BMPs to limit flow onto stabilized area. Use other BMPs to reduce slope lengths. Do not use to stabilize areas with swift moving concentrated flows
Field Condition – Erosion control blankets	**Common Solutions Are:**
Improper anchoring	Dig trench along the top and bury the blankets. Use staples to anchor according to manufacturer's recommendations
Undercutting due to inadequate preparation	Prepare the soil surface. Remove rocks, clods and other obstructions. Fill in rills in uneven areas to promote good contact between mat and soil
Excessive water flow across stabilized surface	Use other BMPs to limit flow onto stabilized area. Use other BMPs to reduce slope lengths. Do not use to stabilize areas with swift moving concentrated flows
Field Condition – Straw wattle	**Common Solutions Are:**
Runoff flows under the fiber roll or daylight shows under fiber roll	Trench-in rolls to a depth of 4 in and stake. Place compacted soil along the uphill side of the fiber roll
Runoff flows between fiber rolls	Ensure that fiber rolls are butted tightly together and staked
There is excessive sediment accumulation	Remove accumulated sediment. Apply soil stabilization measures to contributing areas
Field Condition – Wind Erosion	**Common Solutions Are:**
Excessive dust leaves the site	Increase frequency of water application. Consider using a palliative or binder on inactive areas
Watering for dust control causes erosion	Reduce water pressure on the water truck. Check watering equipment to ensure that it has a positive shutoff. Water less frequently
Sprayed areas are ineffective at limiting dust	Re-spray areas and ensure that the application rate is proper

5.0 POST-CONSTRUCTION

Upon completion of construction within the project area:

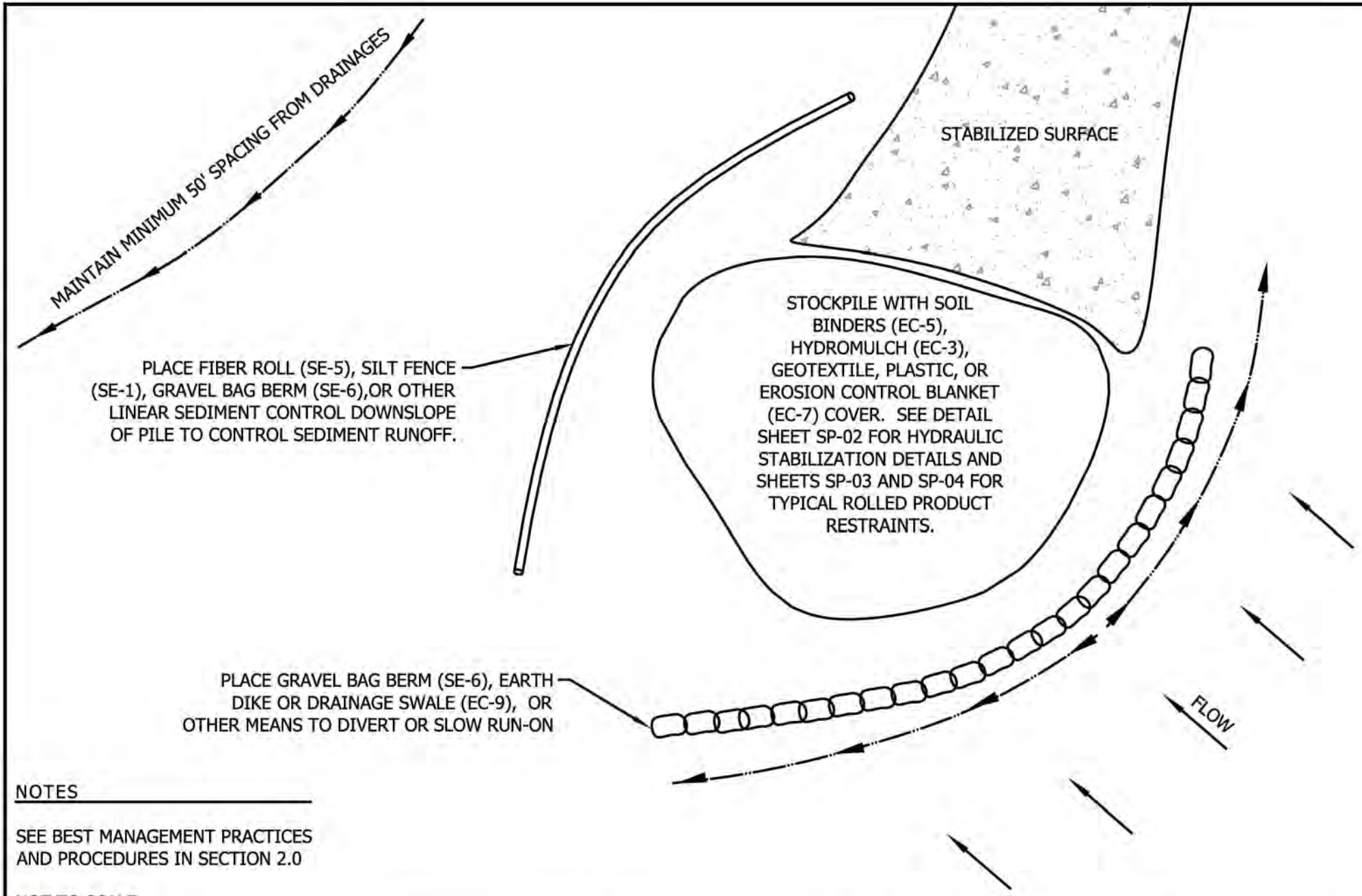
- Remove all temporary, non-biodegradable BMPs;
- Remove all construction equipment from the site;
- Clear all staging areas of any debris, construction materials, and contaminants;
- Return all drainage ways affected by any stockpiles or stockpile to their pre-construction line and grade; and
- Cover disturbed soil areas with temporary and/or permanent stabilization.

Attachment A Activity Specific Installation Details

The following installation details are included to illustrate installation techniques. It is noted that specific installation of any facility must consider the restrictions of the installation site, and that modifications to the following may be required given local conditions.

The following details are included in this Plan

SP-01 Typical Stockpile Placement
SP-02 Hydraulic Stabilization
SP-03 Typical Plastic or Fabric Cover Restraints



NOTES

SEE BEST MANAGEMENT PRACTICES AND PROCEDURES IN SECTION 2.0

NOT TO SCALE

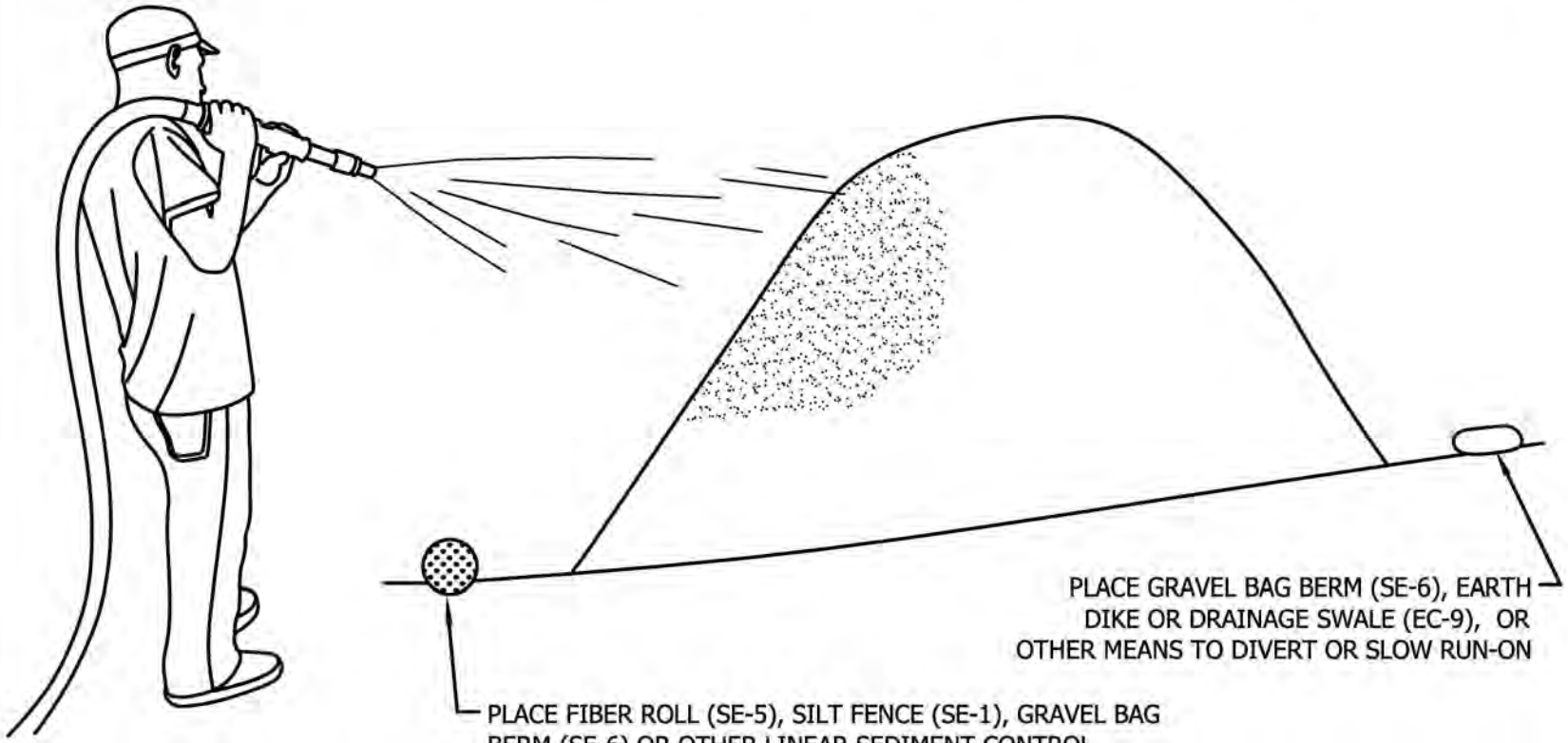
Pacific Gas and Electric Company

TYPICAL STOCKPILE PLACEMENT

A-ESCP - STOCKPILE MANAGEMENT

SP-01

PRODUCT	DURATION	APPLICATION RATE	DILUTION RATE	NOTES
SOILTAC	6 MONTHS	1 GAL / 220 S.F.	9 PARTS WATER TO 1 PART PRODUCT	APPLY IN 2 PASSES
FLEXTERRA FGM	6 MONTHS	1 BALE / 800 S.F.	1 BALE TO 125 GAL WATER	SPECIAL EQUIPMENT / VENDOR REQUIRED



NOTES

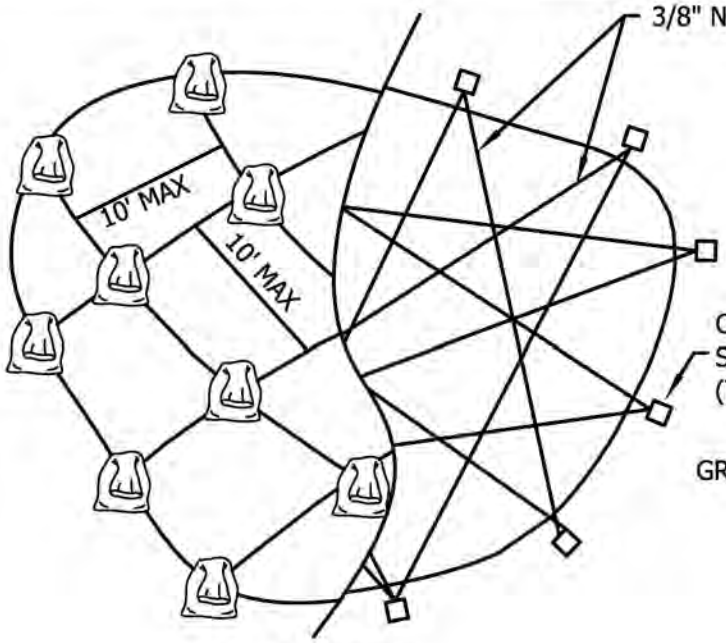
1. SEE BEST MANAGEMENT PRACTICES AND PROCEDURES IN SECTION 2.0.
2. SPRAY FROM MULTIPLE DIRECTIONS TO AVOID SHADOWING.
3. FOLLOW MANUFACTURERS MIXING AND APPLICATION GUIDES.
4. ENSURE THE PRODUCT IS APPLIED WITH ADEQUATE TIME TO CURE.
5. IF SOIL BINDERS ARE USED IN ON-SITE WATER TRUCKS OR TRAILERS, MAKE SURE TO CLEAN ALL BINDER RESIDUE FROM EQUIPMENT AFTER SPRAYING.

Pacific Gas and Electric Company

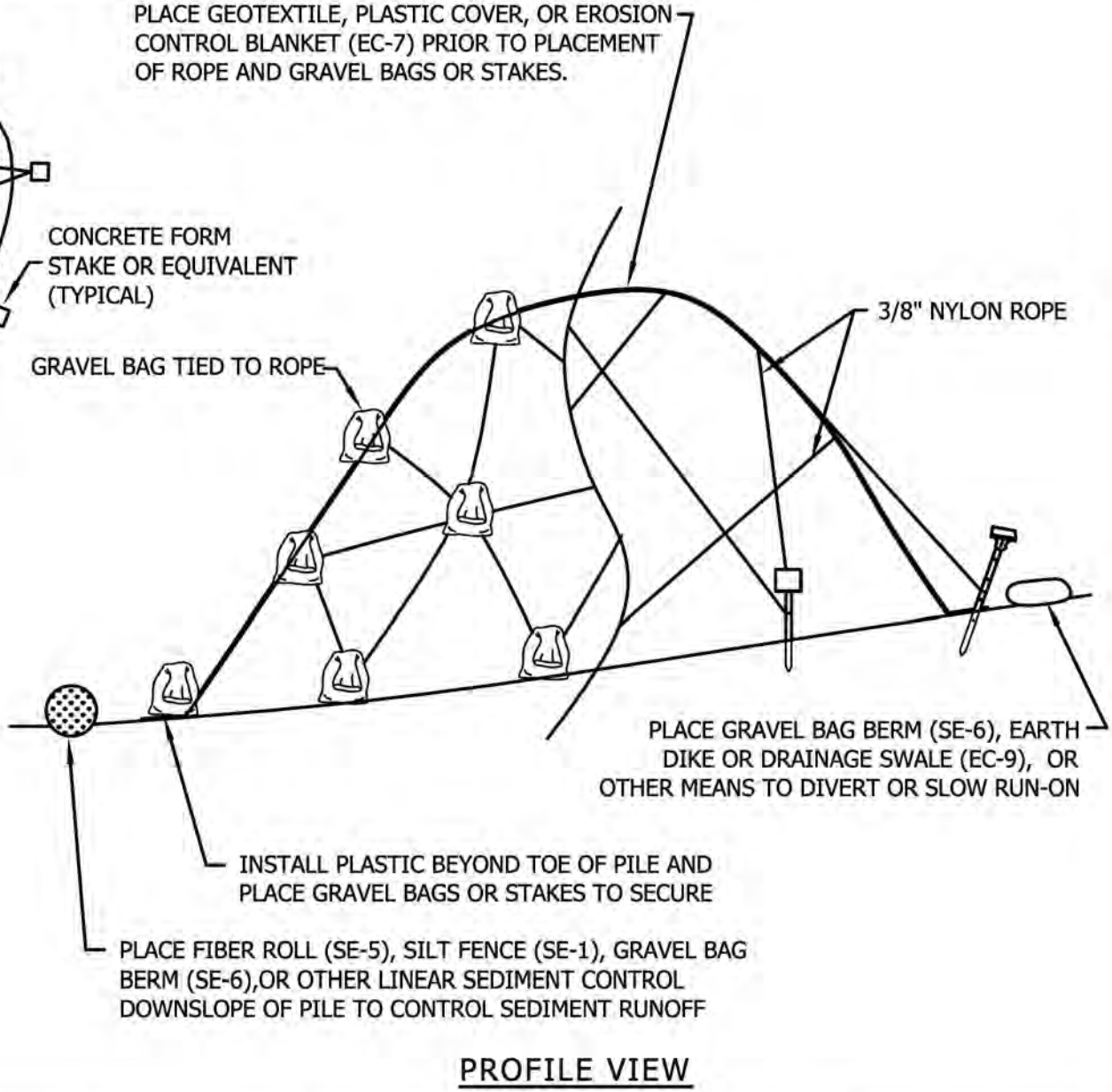
HYDRAULIC STABILIZATION

SOIL BINDER OR HYDROMULCH
A-ESCP - STOCKPILE MANAGEMENT

SP-02



PLAN VIEW



PROFILE VIEW

NOTES

SEE BEST MANAGEMENT PRACTICES AND PROCEDURES IN SECTION 2.0

PLACE BAGS AT 10' ON CENTER BOTH WAYS

NOT TO SCALE

Pacific Gas and Electric Company

PLASTIC OR FABRIC COVER

GRAVEL BAG OR CONCRETE FOR STAKES AND ROPE
A-ESCP - STOCKPILE MANAGEMENT

SP-03

Appendix D

Dispersion and Frequency Analysis

Table of Contents

1.0 Introduction 1
1.1 Battery Failures (non-fire and fire) 3
1.2 Models and Approach 3
2.0 Emission Rates and Source Terms 4
2.1 UL9540A Testing 4
2.2 Emission Rates Non-Fire Case 5
2.2.1 UL Testing Pollutants Non-Fire Case 5
2.2.2 Additional Pollutants Non-Fire Case 6
2.2.3 Mass and Volume Loss Rates Non-Fire Case 7
2.2.4 Duration Non-Fire Case 8
2.2.5 Temperature and Flowrate Non-Fire Case 8
2.3 Emission Rates Fire Case 8
2.3.1 Pollutants Fire Case 9
2.3.2 Fire Mass, Volume and Heat Loss Rates 10
2.3.3 Duration Fire Case 10
2.3.4 Temperature and Flowrate Fire Case 11
2.4 AERMOD Source Terms and Receptor Grid 12
2.5 Health Thresholds 15
2.6 Meteorology 16
3.0 Emission Calculation Results 18
3.1 Non-Fire Case 18
3.2 Fire Case 18
4.0 Modeling Results 19
4.1 Non-Fire Case 19
4.2 Fire Case 20
4.3 Multiple Chemical Effects 20
4.4 Flammability and Thermal Effects 21
5.0 Frequency Analysis 22
5.1 Installed Base: EIA 23
5.2 Incident History 23
5.3 Estimated Frequencies 24
6.0 Deposition 26
7.0 Conclusions 28
8.0 References 29

List of Tables

Table 1 - LG Manufacturer Battery Off-gassing Primary Pollutants 5
Table 2 - Potential Battery Off-gassing additional Pollutants 6
Table 3 - Volume, Mass Emission Rates and Duration non-fire case 7
Table 4 - Temperature and Flow Rates 8
Table 5 - Fire Case Pollutants 9
Table 6 - Mass Loss Values and Duration Fire Case 10

Table 7 - Temperature and Velocity Values fire case 12
Table 8 - AERMOD Source Terms 12
Table 9 - Receptor locations and distances 13
Table 10 - Non-fire case emissions summary 18
Table 11 - Fire case emissions summary 18
Table 12 - AERMOD Modeling results non-fire case, distance, feet 19
Table 13 - AERMOD Modeling results fire case, distance, feet 20
Table 14 - Hazard Index Values at Sensitive Receptors 21
Table 15 - EIA Database Installed Battery Capacity 23
Table 16 - Estimated Frequency of Thermal Off-gassing Events 24

List of Figures

Figure 1 - LG JF2 unit 2
Figure 2 - Sensitive Receptor Locations 14
Figure 3 - Nut Tree Airport Wind Rose and frequency 17

Attachments

Attachment 1 Tables
Attachment 2 Figures
Attachment 3 Modeling Inputs

List of Acronyms and Definitions

Acronym	Definition
AEGL	Acute Exposure Guideline Level
Ah	Amp hour
AHJ	Authority Having Jurisdiction
BMS	Battery Management System
BESS	Battery Energy Storage System
C	Degrees centigrade
CGA	Compressed Gas Association
EPA	Environmental Protection Agency
g/Wh	Grams per watt hour
GWh	Gigawatt hour (equal to 1,000 MWhs)
HVAC	Heating Ventilation and Air Conditioning
IDLH	Immediately Dangerous to Life and Health: developed by National Institute for Occupational Safety and Health (NIOSH)
IEEE	Institute of Electrical and Electronics Engineers
K	Degrees kelvin
Kg	Kilogram
kj/Wh	Kilojoules per watt hour
kWh	Kilowatt hour
L/Wh	Liters per watt hour
L/s	Liters per second
LEL	Lower Explosive Limit
LFL	Lower Flammability Limit
LFP	Lithium Iron Phosphate
m^2	Square meters
m^3/s	Cubic meters per second
MWh	Megawatt hour (equal to 1,000 kWh)
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NRTL	OSHAs Nationally Recognized Testing Laboratory
ppm	Parts Per Million
SCADA	Supervisory Control and Data Acquisition
SDS	Safety Data Sheet
SOC	State of Charge
ug/m^3	Micrograms per cubic meter
THR	Thermal release rate, kj/Wh
Thermal Runaway	During the thermal runaway, the battery temperature increases due to exothermic reactions. In turn, the increased temperature accelerates those degradation reactions and the system destabilizes, potentially releasing flammable and toxic gases.
SFPE	Society of Fire Protection Engineers
UL	Underwriters Laboratory
USDOT	U.S. Department of Transportation

Acronym	Definition
Wh	Watt hour

1.0 Introduction

North Bay Interconnect, LLC and Corby Energy Storage, LLC, propose to construct, own, and operate the Corby Battery Energy Storage System Project (project). The purpose of this analysis is to conduct dispersion modeling to estimate potential pollutant concentrations at receptors in the event of a thermal off-gassing incident at the project site, and to estimate the frequency of potential thermal off-gassing incidents associated with the project. Off-gassing is the generation of gases from the battery cells due to a malfunction. Significance criteria and determination of impacts are discussed separately and can be found in **Section 5.10, Public Health**, and in **Section 5.8, Land Use and Agriculture**. As additional studies, analysis, and testing of BESS systems are produced in the future, as well as more operating experience and incident data, that information will be used to update these study results for future projects and proceedings. In addition, we continue to review how other authorities having jurisdictions (e.g., counties, states, and countries) are assessing impacts from BESS thermal runaway events and apply appropriate methodologies as necessary.

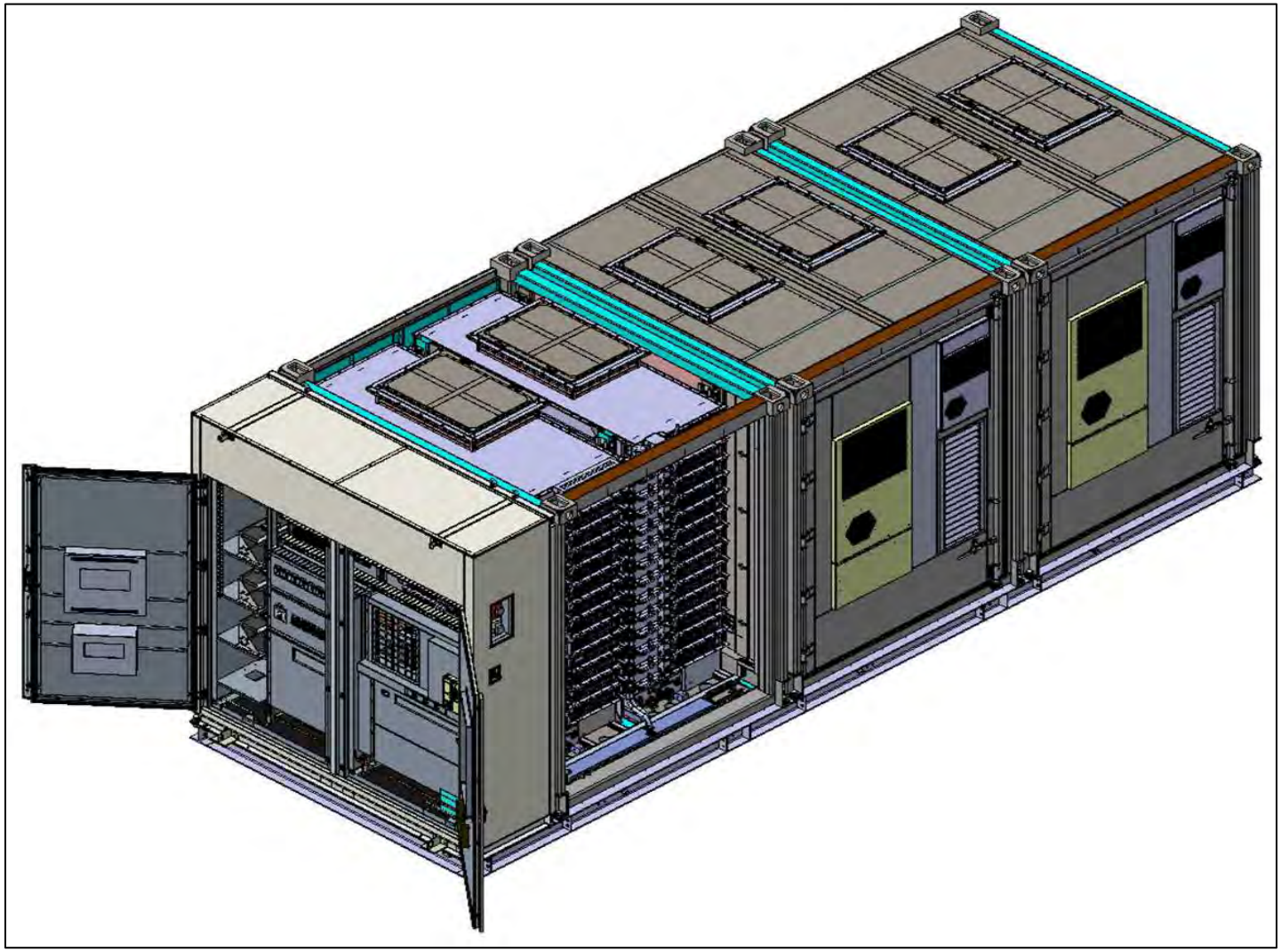
This analysis examines the potential upset and malfunction scenario for the project, which could result in impacts to nearby receptors from toxic and flammable gas releases or deposition of particulates. The project would not cause any significant impacts from toxic gas or flammable gas releases during normal operations, as the project's only operations include battery storage and planned and unplanned maintenance activities (such as replacement of battery modules or electrical components if needed).

This section also examines the historical incidents associated with similar battery installations and estimates the frequency of incidents potentially occurring at the project site, based on the United States (U.S.) Energy Information Administration (EIA) estimates of installed battery systems.

The LG JF2 are the most recent design of the LG series. The LG units have previously undergone UL9540A testing. The results of the UL9540A testing for the LG unit demonstrate that with heating, the lithium iron phosphate (LFP) battery cells can produce a range of flammable and toxic chemicals due to cell off-gassing. Accordingly, this information is applied in this analysis.

An LG JF2 5.1 unit is composed of six "racks" or three M-LINKs (with two racks per M-LINK). Each rack has 14 modules, and each module is composed of 120 cells. Each rack therefore has 1,680 cells and each unit has 10,080 cells. See Figure 1 below.

Figure 1 - LG JF2 UNIT



Source: LG

1.1 Battery Failures (non-fire and fire)

To address potential impacts, there are generally two scenarios that can occur: off-gassing of toxic and flammable gases without fires, and off-gassing of toxic gases associated with a fire. The non-fire case involves an array of toxic and flammable pollutants that are different from the fire case. The fire case also has substantial heat and buoyancy and therefore has different dispersion characteristics from the non-fire case, which has lower temperature and less buoyancy. A fire case can involve a period of non-fire off-gassing prior to the fire initiating.

1.2 Models and Approach

To address the dispersion of toxic gases, a technical modeling program, the American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD), was utilized, incorporating five years of hourly meteorological data from 2017–2021 from the Nut Tree Airport. This approach allows for a wide range of meteorological conditions, wind speed and stability, to be examined to identify the worst-case downwind distance that emissions from an incident could produce.

The reasonable worst-case is used to ensure that the maximum potential impacts are examined that are still reasonably foreseeable to comply with CEQA full disclosure and to identify the extent of the significant hazards associated with the CEQA analysis. This approach is also in line with the EPA Risk Management Program (RMP) rule which implements Section 112(r) of the 1990 Clean Air Act amendments to improve chemical accident prevention at facilities, and which requires the quantification of a worst-case release scenario analysis to identify the potential reach and effect of a hypothetical worst-case accidental release. It also addresses the requirements of NFPA 855 Section 4.4 Hazard Mitigation Analysis including the consequences of thermal runaway in a single unit with failure of protective systems.

AERMOD does not address explosive or flammable vapor deflagration effects. To address flammable impacts, another technical modeling program, CANARY©, has been utilized to estimate explosion and flammable vapor cloud deflagration (flammable vapor and flame effects or overpressure) impacts.

There are a range of studies examining potential effects of battery off-gassing and fires (see Section 8). In order to estimate the emission rates and modeling source terms, emission rates from 10 studies were utilized, as well as the cell level UL9540A testing results associated with the LG cells used in the JF2 units, to estimate a reasonable worst-case scenario (see Attachment 1) to provide inputs to the dispersion model AERMOD.

2.0 Emission Rates and Source Terms

There would be no significant emissions from the battery systems associated with the project during normal operations (battery storage, planned and unplanned maintenance).

However, in the event of a battery cell malfunction leading to a thermal runaway, the project could emit air pollutants to the atmosphere, called off-gassing. For these types of battery cell malfunctions, air pollutant emissions could be generated due to elevated temperatures within a single storage cell or group of storage cells caused by a runaway reaction. When Li-ion batteries are mistreated with high over-temperature or a strong overcharge, or suffer damage or manufacturing defects, they can transition into "thermal runaway." During thermal runaway, the battery temperature increases due to exothermic reactions. In turn, the increased temperature accelerates degradation reactions and the system destabilizes. The thermal runaway high temperatures cause off-gassing of pollutants and could result in fires or could continue to off-gas without a fire.

The project would be equipped with Battery Management Systems (BMS), including temperature monitoring and control systems to prevent or control battery cell malfunctions, including ventilation systems that ensure flammable gases do not accumulate to concentrations exceeding 25 percent of the Lower Flammability Limit (LFL) as per NFPA 855. However, to determine the reasonable worst-case public health impact(s) for this analysis, and to comply with the NFPA 855 requirements for a hazard mitigation analysis, it is assumed these control systems fail, including the ventilation systems, and do not control the battery cell malfunction.

Emission rates are developed and used as inputs to the dispersion model. Emission rates are described in a number of different studies, generally estimating the emissions of various pollutants per unit of battery size (Wh or kg). These studies provide an indication of the range of emissions that could be generated by battery cells. However, as these studies examine a wide range of battery cell sizes and configurations, the UL9540A testing conducted on the LG cells provides the most accurate estimate of a limited range of pollutants as they are conducted on the specific cells proposed for this project. The UL9540A testing did not examine the wide range of different toxic materials that could be produced, or the pollutants from the fire case; therefore, other studies are applied to supplement this information to ensure a comprehensive analysis of potential pollutants and impacts.

2.1 UL9540A Testing

The project would utilize LG JF2 units (see Figure 1). UL9540A requires testing of the individual cells, groups of cells (modules) and the entire "unit" (as shown in Figure 1). As part of the UL9540A cell level testing, an individual cell was subjected to external heating until it underwent thermal runaway. The off-gassed flammable and toxic pollutants were measured, as well as the total volume of materials released. An entire

unit was also tested as part of the UL9540A unit testing. Under this unit level UL9540A testing, a group of cells in a module were forced into thermal runaway in a unit and the resulting tendency for the thermal runaway to spread to the entire unit or other nearby units was assessed.

The UL9540A tests require that the battery arrangements are forced into thermal runaway by inserting heaters into the batteries and forcing an elevated temperature of the system, thereby producing thermal runaway. For the units, the unit level test is primarily performed to examine the ability of the units to maintain containment and prevent the spread of a fire or thermal runaway scenario to adjacent areas of the units or to adjacent units.

The unit level UL9540A testing indicated that only a subset of the cells within the module area heated went into thermal runaway and the thermal runaway did not spread to neighboring units and modules. Some toxic and flammable gases were observed but no flames were produced during the UL9540A unit level testing. No flying debris, fires, or explosive discharge of gases occurred during the UL9540A tests (TT 2026c).

For the LG battery units, since only the first, non-fire scenario occurred during the UL9540A testing, LG also conducted additional testing that involved forcing the units into a fire situation with a propane heater (TT 2026e).

2.2 Emission Rates Non-Fire Case

For the non-fire case, Attachment 1 and Section 8 lists a range of studies examined to assess the potential pollutants released, as well as the various source terms, such as duration and temperature. These are discussed below. The emission rates and source terms selected are conservative, ensuring that a maximum reasonable value of impact distance is generated.

2.2.1 UL Testing Pollutants Non-Fire Case

“UL Testing pollutants” are pollutants identified during the cell level testing of the LG cells. Table 1 provides a list of the pollutants.

TABLE 1 - LG MANUFACTURER BATTERY OFF-GASSING PRIMARY POLLUTANTS

Pollutants	Mole Percent
Carbon monoxide (CO)	10.0
Hydrogen (H_2)	59.3
Methane (CH_4)	3.68
Acetylene (C_2H_2)	0.16
Ethylene (C_2H_4)	2.53
Ethane (C_2H_6)	0.53
Propane (C_3H_8)	0.12
Propene (C_3H_6)	0.26
C_4	0.40

TABLE 1 - LG MANUFACTURER BATTERY OFF-GASSING PRIMARY POLLUTANTS	
Pollutants	**Mole Percent**
C_5	0.12
C_6	0.39
Benzene (C_6H_6)	0.09
Toluene (C_7H_8)	0.01
Xylene (C_8H_{10})	0.01

Note: based on LG proprietary testing for single cell level testing. These are the pollutants in the UL9540A Cell Level Testing and are estimates of the pre-combustion off-gassed materials.
Source: TT 2026c

2.2.2 Additional Pollutants Non-Fire Case

"Additional pollutants" are pollutants not specifically tested for in the UL9540A testing but determined to potentially be emitted, along with the UL Testing pollutants, based on other studies. These additional pollutants are listed in Table 2.

TABLE 2 - POTENTIAL BATTERY OFF-GASSING ADDITIONAL POLLUTANTS		
Pollutants	**Mole Percent**	**Reference Source**
Hydrochloric Acid (HCl)	1.9	SFPE 2025, Table 12
Hydrogen Cyanide (HCN)	0.5	SFPE 2025, Table 12
Hydrofluoric Acid (HF)	2.7	SFPE 2025, Table 12
Nitrogen Dioxide (NO_2)	7.9	SFPE 2025, Table 12

Source: SFPE 2025

Pollutant emission rates from other studies can vary substantially. For example, HF emissions are often expressed in terms of HF per energy unit (grams per Wh). But smaller cells often produce larger volumes of total gases per Wh than larger cells. So, directly extrapolating emissions rates from smaller cells to larger cells, such as the ones used in the LG units for this study, would overestimate emission rates. Therefore, it is preferable to use concentration values, such as in the SFPE 2025 or DNVGL 2019 (see Section 8) studies, or per energy unit values from larger cells.

HF has been detected in a number of different studies examined for this analysis (at least four with specific emission rates – JES 2024, Franqueville 2023, SFPE 2025, DNVGL 2019 - and other studies in general discussion related to lithium-ion batteries. See Attachment 1). HF is produced by either the plastics in the battery cells (DNVGL 2017) or the electrolytes (JES 2024, Nilssen 2024) or other components.

HCl, HCN and NO_2 were identified in 2 studies examined (SFPE 2025, DNVGL 2019). NO_2 has been identified in a limited number of non-fire studies. NO_2 is generally produced in situations where there are higher temperatures and combustion (UL cell testing showed cell temperature of 200-300°C during thermal runaway, well below combustion temperatures), or the conversion of fuel bound nitrogen or other catalytic processes. NO_2 off gassing was recorded by DNVGL (2019) in multiple cells in controlled cell testing and therefore has been included here to address a reasonable worst case of NO_2 emissions.

2.2.3 Mass and Volume Loss Rates Non-Fire Case

The mass and volume produced by each cell during UL9540A testing is used to estimate the total mass and volume emissions produced in the event that the unit undergoes thermal off-gassing in a number of cells. Table 3 provides a range of mass, volume rates and durations based on other studies of LFP cells and the UL9540A testing for the LG cells.

TABLE 3 - VOLUME, MASS EMISSION RATES AND DURATION NON-FIRE CASE

Author	Value	Notes
Volume Flowrate per unit of Energy		
SFPE 2025	0.12–2.63	L/Wh range LFP cells, 6 to 250 Wh, Tbl 4 pg 29
SFPE 2025	0.55	L/Wh average LFP cells, Tbl 4 pg 29
SFPE 2025	2.63	L/Wh peak LFP cells, Tbl 4 pg 29
SFPE 2025	0.27	L/Wh larger LFP cells greater than 50 Wh, Tbl 4 pg 29
JES 2024	0.368	L/Wh, pg. 9, average LFP
UL9540A testing (TT 2026c)	0.13	L/Wh, LG Cell Tests, 64L, 509 Wh
CEC Staff Analysis	0.14	L/Wh, based on UL9540A testing plus additional pollutants discussed above
Mass Flow Rate		
Franqueville 2023	0.80	g/Wh, Tbl 3 pg 13
UL9540A testing (TT 2026c)	0.09	g/Wh, LG Cell Tests, 46g, 509 Wh
CEC Staff Analysis	0.11	g/Wh, based on UL9540A testing plus additional pollutants discussed above
Volume Flow Rate		
SFPE 2025	12.00	L/s, LFP cells, Table 7 pg 32
CEC Staff Analysis	6.8	L/s, based on duration and number of cells off-gassed and UL9540A testing volume per cell
Durations		
SFPE 2025	6 hours	1,000 cells with suppression
SFPE 2025	10 hours	Single LG rack, as per SFPE 2025 - 265 seconds per cell off-gassing, 10 percent off-gassing cells at once
CEC Staff Analysis	10 hours	Two LG racks, 3,360 cells

Note: See Section 8 for information on each study.

As shown in Table 3, the values applied in this study for mass emissions per energy unit (per Wh) are generally on the low(er) side of the literature estimates. This is primarily due to the substantially larger cell size of the LG cells than the values examined in the studies (such as, SFPE 2025), which ranged from 6 to 250 Wh, whereas the LG cells are over 500 Wh. In the SFPE 2025 study, the larger cells generally produced lower emission volumes per unit of energy. Studies show a wide range of volume produced as a function of cell sizes, with the smaller cells often producing a higher volume per unit of cell energy (up to 20 times as much as the LG cells in this study).

2.2.4 Duration Non-Fire Case

Historical studies of incidents and unit level testing indicate that off-gassing associated with a thermal off-gassing incident (without fire) can occur over long periods of time, sometimes days. SFPE 2025 estimated a shorter-end of the non-fire off-gassing of six hours for thermal runaway in a subset of the cells in a unit. (The subset was a single "Bay" instead of the entire unit, or about 1,000 cells, and had suppression systems to prevent extended duration). A shorter duration would result in higher mass flow rates (same amount of mass over a shorter duration) and thereby potentially higher ground level concentrations of pollutants. Using the same approach as the SFPE 2025 (265 seconds per cell off-gassing, 10 percent off-gassing cells at once), a single LG "rack" without suppression would have an off-gassing duration of approximately 10 hours. As a worst case, this CEC staff analysis assumed that two racks off-gas simultaneously (a total of 3,360 cells) over a duration of 10 hours, an event which could hypothetically occur if a forklift accidentally ran into two racks at once. See Table 3. Note this is a conservative assumption as the UL9540A testing for a unit which used a heater to heat a subset of cells (not a large puncture scenario), only produced a few cells off-gassing. As actual incidents have produced a range of results, a conservative approach is utilized.

2.2.5 Temperature and Flowrate Non-Fire Case

Temperatures and flowrates are determined from the literature and the UL9540A testing thermocouples. These are shown below.

TABLE 4 - TEMPERATURE AND FLOW RATES

Author	Value	Notes
SFPE 2025	232	Temperature, °C, LFP, cell surface, pg 40
UL9540A	210	Temperature, °C, cell surface
UL9540A	27	Temperature, °C, based on top temp of cabinet
UL9540A	50	Temperature, °C, based on temp of adjacent module
Franqueville 2023	200	Temperature, °C, minimum temp, Tbl 3 pg 13
SFPE 2025	0.0125	Flowrate, m^3/s, LFP, Tbl 25 pg 48

Temperatures at the cell surface can get quite hot, over 200°C. However, as the gases rise through a unit and exit at the top, the gases cool, thereby producing less buoyancy once the gases leave the unit and travel downwind. The adjacent module to the initiating module in the UL9540A testing produced temperatures of close to 50°C, and that temperature was conservatively assumed to be the temperature of the released gases for dispersion modeling during the non-fire case.

2.3 Emission Rates Fire Case

For the fire case, Attachment 1 lists a range of studies examined in order to assess the potential pollutants released, as well as the various source terms, such as duration and

temperature. These are discussed below. As with the non-fire case, the selection of the emission rates, and source terms selected, are conservative, ensuring that a maximum reasonable value of impact distance is generated. For the fire case, dispersion from a fire and determining downwind distances is complicated by a number of different factors, including rapid changes in emission rate, heat release, varying plume buoyancy and entrainment which makes for near-field assessments of fire dispersion complicated. However, as per AERSCREEN and fires, once the distance from the fire increases, the plume behavior is more passive atmospheric dispersion in behavior. A fire associated with a BESS would not be considered a large industrial fire, which can have heat release rates well over 100 MW as opposed to the approximately 10 MW of a BESS fire. The uncertainty due to varying temperatures and emission rates are addressed by utilizing a conservatively lower temperature (thereby increasing ground level impacts) and a conservatively short duration (thereby increasing mass flow).

2.3.1 Pollutants Fire Case

Pollutants associated with the fire case are those identified in various studies related to battery fires. UL testing did not address fire case pollutants. Table 5 provides a list of fire case pollutants.

TABLE 5 - FIRE CASE POLLUTANTS

Pollutant	Reference Study
Acrolein	JPS 2025
CO	JPS 2025, SFPE 2025, Ramboll 2024, EPRI 2020, DNVGL 2019
Formaldehyde	JPS 2025
HCl	SFPE 2025, Ramboll 2024, EPRI 2020, DNVGL 2019
HCN	JPS 2025, Ramboll 2024, EPRI 2020
HF	JPS 2025, SFPE 2025, Ramboll 2024, EPRI 2020, Larsson 2017, Franqueville 2023, DNVGL 2019
NH_3	JPS 2025, SFPE 2025
NO_2	SFPE 2025, EPRI 2020, DNVGL 2019
POF_3	SFPE 2025, Larsson 2017
SO_2	SFPE 2025

Note: For LFP battery type fires, H_2, Benzene, Toluene, COF_2, Xylene were not identified in the studies. POF3 was assumed to be a subpart of HF in analysis.
Source: See Section 8 for reference study details.

HF was shown to be produced during fire conditions in a number of studies (see Table 5). Other fire situations, such as house fires or internal combustion engine vehicle fires, also produce some HF, although studies show that the mass rates for HF are substantially lower for these other fires. Controlled burns of houses (FMGlobal 2021) indicate that while house fires produce similar levels of acrolein, NO_2, benzene and HCN to battery fires, HF is substantially lower for house fires, depending on materials. While house fires have low HF levels, other materials, such as plastics and insulation that could be within a house fire (EST 2026), produce levels of HF similar to battery fires so that if a house has a high amount of those materials, it could have higher HF levels.

Electric vehicle fires can also emit toxic pollutants. Hynynen (2023) conducted testing on a range of vehicles and found that HCl emissions per kg of mass lost are similar to the BESS fire scenarios, with HF being substantially higher than internal combustion vehicles. HF emissions from an EV fire, while lower than a BESS fire, were substantially above those from a house fire.

2.3.2 Fire Mass, Volume and Heat Loss Rates

The total mass lost during a fire is presented in studies based on grams per BESS energy unit, or g/Wh. Estimates of weight loss rates are based on estimates of the percentage of battery loss (Ramboll 2024) or total heat loss rates and heats of combustion. Table 6 provides the range of total mass loss rates based on other studies, as well as durations.

TABLE 6 - MASS LOSS VALUES AND DURATION FIRE CASE

Author/Reference	Value	Notes
Mass Loss		
Ramboll 2024	2.12	g/Wh at 22% loss with 48,000kg total unit weight
SFPE 2025	3.35	g/Wh, calculated from THR and Heat of combustion, dividing the THR by the heat of combustion (see below). See SFPE 2025 pg 34 and 37
Franqueville 2023	3.90	g/Wh, tbl 3 max
Applicant 2026	1.24	g/Wh converted from lbs lost unit internals only and 5.1 MWh
CEC Staff Analysis	3.35	g/Wh
Heat Rate		
SFPE 2025	58.00	THR, kj/Wh, average+SD, LFP, Tbl 8
SFPE 2025	71.00	THR, kj/Wh, max, LFP
Larsson 2017	70.50	THR, kJ/Wh, Tbl 3
Larsson 2014	75.00	THR, kJ/Wh
SFPE 2025	17.30	Heat of Combustion, kJ/g
Duration		
SFPE 2025	2 hours	Based on East Hampton incident with suppression
LG Fire Test	7.5 hours	Based on forced burn test by LG
SFPE 2025	6 hours	Other incidents
CEC Staff Analysis	6 hours	

Note: For LFP battery type fires.
Source: See Section 8 for reference study details.

For this study, the estimate of total mass loss is based on the SFPE 2025 study examining heat loss. This value is at the higher end of the estimates, as it is assumed other non-electrolyte elements (e.g., plastic components and wiring) would also be lost in a fire.

2.3.3 Duration Fire Case

Historical studies of incidents and unit level testing indicate that a fire case can consume the entire unit or part of a unit in a shorter time than the non-fire case due to the higher temperatures. The following studies and tests evaluated durations:

- Incidents (listed in **Section 4.4, Worker Safety and Fire Protection**) indicate a range of fire durations of 45 minutes to 7 days. The shorter duration fire incidents utilized suppression system (application of water or other suppression techniques).
- SFPE 2025 estimated a low end of the fire duration of two hours based on the East Hampton incident in May 2023 (SFPE 2025). However, in East Hampton, the fire was contained by the enclosure's sprinkler system and therefore, it is expected the fire would have likely burned longer if suppression had not been applied (SFPE 2025).
- The fire test case with the LG units conducted by LG took 7.5 hours to consume four of the six racks (or two of the three M-LINKs).
- Other incidents discussed in SFPE 2025 (Elkhorn and Victoria fires in 2022 and 2021 respectively) indicate that fires can consume an entire unit in a minimum of six hours (SFPE 2025).

Therefore, a six-hour duration is applied in this CEC staff analysis for the fire case to ensure a conservative approach with a shorter duration producing higher mass flows. It's assumed that the fire would consume the entire unit and is anticipated to capture the peak 1-hour rate for an incident. Note that the non-fire case assumed a 10-hour duration.

During forced fire testing of the unit by LG (see section 2.1), the forced fire was propagated through the use of a propane heater. While this was needed in order to force a fire case in a testing condition, most incidents have shown that an entire BESS unit will be consumed in a fire without the use of a heater. Therefore, a fire case consuming the entire BESS unit is considered a reasonable worst case.

The duration of battery fires is relatively long relative to other fire types, such as residential house fires, which FMGlobal testing observed durations of up to 24 minutes (FMGlobal 2021), or electric vehicle fires (up to 2 hours 20 minutes in testing, Hynynen 2023). This is most likely due to the high density of materials in a BESS and the inability of air to permeate the fuel easily, relative to a residence where most of the fuel is wood with air access readily available or an electric vehicle, with a relatively smaller battery, and the tendency of emergency responders to allow BESS fire to burn out on their own.

2.3.4 Temperature and Flowrate Fire Case

Temperatures and flowrates are determined from the literature review. These temperatures and flowrates are shown in Table 7.

Temperatures during the LG fire test for a unit revealed temperatures could reach a maximum temperature of over 1,000°C. This is expected, as other studies, such as modeling for flares, show flaming temperatures are relatively high. However, there are periods during the unit fire test where temperatures are lower, as the flame is not as intense and the activities subside before either increasing again or stopping. Since a lower temperature produces a more conservative analysis, with less plume buoyancy

and higher ground level impacts, the lower temperature recommended by SFPE 2025 is used in this study to be conservative and to capture periods of a fire case where the fire intensity is lower. SFPE 2025 flow velocity is also used in this study as it is substantially below that of flares in the U.S. EPA AERSCREEN model as would be expected (flares have more forced flow and therefore higher velocities, causing greater lift and buoyancy, producing potentially lower ground level impacts). Note, the Applicant's report utilizes a lower value but did not appear to be substantiated as well as the SFPE 2025 value.

TABLE 7 - TEMPERATURE AND VELOCITY VALUES FIRE CASE

Author/Reference	Value	Notes
Temperature		
SFPE 2025	499	K, LFP, Tbl 25
Ramboll 2024	632	K, Tbl 4-2
Fire Test LG	1,223	K, ventilation arm temp max (950°C)
Applicant 2026	1,073	K, pg. 10 Appendix 3.9-A: Thermal Event Plume Analysis
AERSCREEN EPA	1,273	K, values for flares
CEC Staff Analysis	499	K
Velocity		
SFPE 2025	8.5	velocity m/s, LFP, Tbl 25
AERSCREEN	20.0	velocity m/s, for flares
Applicant 2026	1.0	velocity m/s, pg. 10
CEC Staff Analysis	8.5	velocity m/s

Source: See Section 8 for reference study details.

2.4 AERMOD Source Terms and Receptor Grid

The AERMOD dispersion model used in this CEC staff analysis to estimate pollutant concentrations requires a number of inputs to estimate the potential downwind pollutant concentration levels for each hour of the meteorological data. Table 8 provides the AERMOD source terms.

TABLE 8 - AERMOD SOURCE TERMS

Input	Value	Notes
Non-Fire Case		
Release diameter, m^2	1.87	Equivalent to 6 vent openings, 3.3 ft^2 each
Roughness	Rural	Open area
Height of Release, m	2.9	Height of unit
Angle of release, from Horz, deg	90	Vertical release
Flagpole height, m	1.8	Height of a person
Fire Case		
Release diameter, m^2	4.8	Equivalent to area of unit top
Roughness	Rural	Open area
Height of Release, m	2.9	Height of unit
Angle of release, from Horz, deg	90	Vertical release
Flagpole height, m	1.8	Height of a person

Source: See Section 8 for reference study details.

AERMOD also includes the downwash effects of buildings/obstructions/equipment located in the vicinity of the source point. Consistent with AERMOD modeling guidance, only “buildings” (“buildings” is the term use in the AERMOD model, even though it can be any obstruction) located a horizontal distance within 5x the height of the source could have an effect on the dispersion plume and cause a downwash effect, thereby increasing ground level concentrations. As the height of the proposed unit is about three meters, only “buildings” within about 15 meters of the source are included, which would be all surrounding units to the source unit (see Attachment 2). These unit heights and sizes have been included in the AERMOD modeling.

The receptor grid used is a tight grid in close proximity to the source point (one meter spacing) out to 50 meters, and then a 10-meter spaced grid out to 500 meters, and then a 25-meter spaced grid out to two kilometers, for a total of 44,521 grid points. The tight grid provides for accurate estimates of higher pollutant concentration levels near the source.

A single source is used at the northernmost proposed unit, located closest to the nearest receptor. Grid and source points are processed with AERMAP to include elevation. Attachment 2 provides the receptor grid and source map. To determine impacts at receptors located to the south, which would be closer to units at the south end instead of the north end, the results are shifted to allow for determination of the impacts if a unit to the south (or the east or the west) were involved in an incident. These results are shown in Attachment 1 for each receptor.

Table 9 shows a listing of receptors and distances to the closest battery units. See Figure 2 for a map showing the receptor locations.

TABLE 9 - RECEPTOR LOCATIONS AND DISTANCES

LOCATION CODE	LOCATION DESCRIPTION	DISTANCE TO CLOSEST BATTERY UNIT, FEET
North 1	Residence on Kilkenny Road	880
North 2	Residence on Byrnes Road	1,550
North 3	Residence on Byrnes Road	1,610
North 4	Residence on Byrnes Road	2,160
East 1	Residence on Kilkenny Road	2,630
East 2	Residence on Lewis Road	3,900
East 3	Residence on Lewis Road	3,170
South 1	Residence/worker on Byrnes Road	960
South 2	Residence on Lewis Road	2,390
South 3	Residence on Byrnes Road	2,450
West 1	Residence on Kilkenny Road	2,925

Source: See Figure 2 for maps of receptor locations.

Figure 2 - Sensitive Receptor Locations

Source: GoogleEarth

2.5 Health Thresholds

Health thresholds are those concentrations of pollutants that could potentially produce health effects. The following levels are examined in this study.

Acute Exposure Guideline Levels (AEGLs)

AEGLs are chemical-specific values developed and updated by a federal advisory committee chartered by the U.S. EPA and involved collaboration with the National Research Council (NRC), other federal agencies (e.g., Department of Defense, Department of Energy), and private sector experts to plan for and respond to rare, short-term releases of airborne chemicals, such as during a chemical spill. They represent threshold exposure limits for the general public and are applicable to emergency exposures ranging from 10 minutes to 8 hours (EPA 2025). Three levels, AEGL-1, AEGL-2, and AEGL-3, are provided by the EPA for each of five exposure periods (10-min, 30-min, 1-hour, 4-hour, and 8-hour) and are distinguished by varying degrees of severity of toxic effects. The three levels are analyzed in this study for the non-fire case pollutants listed in Tables 1 and 2 and the fire case pollutants listed in Table 5, assuming a 60-minute receptor exposure duration (to be consistent with other standards, such as Emergency Response Planning Guidelines, ERPG) as follows:

- AEGL-1 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure.
- AEGL-2 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape.
- AEGL-3 is the airborne concentration of a substance above which it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death.

Immediately Dangerous to Life and Health (IDLH)

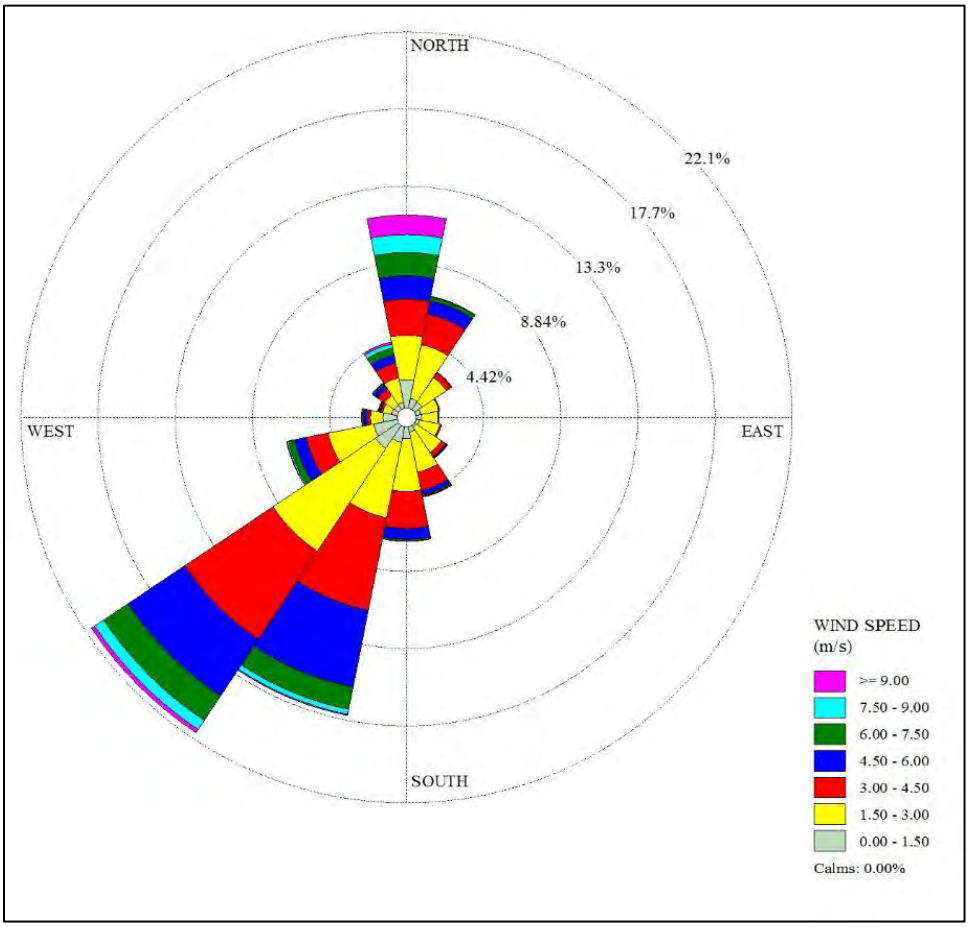
The National Institute for Occupational Safety and Health (NIOSH) IDLH values characterize high-risk exposure concentrations and conditions and are used as a component of respirator selection criteria first developed in the mid-1970s. IDLH values are established to: (1) ensure that a worker can escape from a given contaminated environment in the event of failure of the respiratory protection equipment; and (2) indicate a maximum level above which only a highly reliable breathing apparatus, providing maximum worker protection, is permitted. IDLH is specified in the National Fire Protection Association (NFPA) 855 for BESS systems (NFPA 2026); therefore, it is also included as a level of concern in this study.

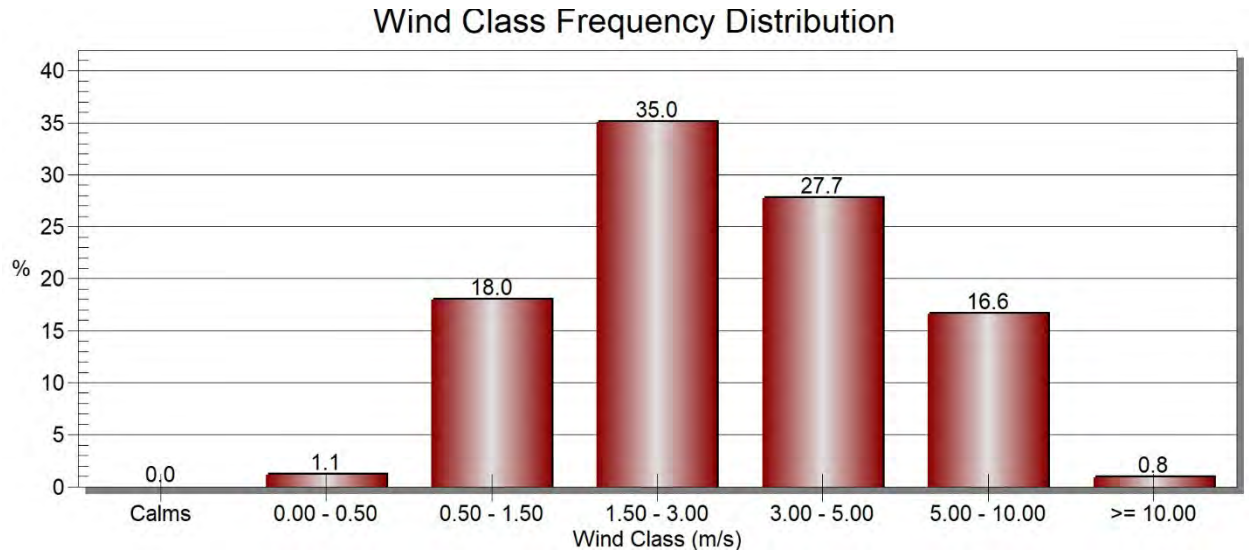
In this study, the AEGL levels are used as the significance thresholds for public exposure since they are intended for emergency planning, accidental chemical releases, public protection, and assessing risks. The IDLH results are shown for impacts analysis for onsite workers and first responders only. Attachment 1 provides the health thresholds for pollutants examined in this study for both the non-fire and fire cases. The 1-hour AEGLs are used in order to be consistent with other standards (such as ERPGs).

2.6 Meteorology

AERMOD utilizes formatted meteorological files that contain hourly data for five years, including wind speed, direction, and various stability elements used to define the dispersion characteristics of pollutants in the air. This study utilizes data from the years 2017–2021, from the Nut Tree Airport, located approximately three miles southwest of the project site. Figure 3 illustrates the wind rose and wind speed frequencies for the meteorological data utilized in this study. As shown, winds come predominantly from the southwest.

Figure 3 - Nut Tree Airport Wind Rose and Frequency





Notes: Wind rose columns show the direction wind is coming from. Wind speed in meters per second.
Source: For year 2017–2021, Nut Tree Airport 301 County Airport Rd., Vacaville, CA 95688, United States. Wind speed 1 m/s = 2.24 mph.

3.0 Emission Calculation Results

Emissions of pollutants for both the non-fire and fire cases are calculated based on the emission rates discussed in Section 2 along with the LG cell and unit characteristics (size, capacity, etc.). The emissions are presented below.

3.1 Non-Fire Case

For the non-fire case, emissions could occur over a long period of time (10-hour duration of off-gassing) and are conservatively estimated to off-gas from two of the six racks in the BESS unit. This is considered to be a reasonable worst case based on UL9540A testing and historical incidents. The non-fire case produces less emissions than the fire case, but has much less buoyancy than the fire case due to the lower temperatures. Accordingly, the non-fire case can therefore potentially have greater downwind near-ground-level impacts. Table 10 shows the emission rates from the BESS during the incident. Attachment 1 provides further detailed tables.

TABLE 10 - NON-FIRE CASE EMISSIONS SUMMARY

Pollutant	Emissions, grams/second
Benzene	0.019
CO	0.75
HCl	0.18
HCN	0.04
HF	0.14
NO_2	0.96
Toluene	0.0024
Xylene	0.0028
Total Flow	5.64

Source: See Attachment 1 for detailed tables.

3.2 Fire Case

For the fire case, due to the higher temperatures, more material is consumed and the emissions rates are higher than the non-fire case. The fire case assumes the entire BESS unit is consumed by the fire. There is also a different array of pollutants. Emissions are shown in Table 11 and Attachment 1 provides details on the emission rates.

TABLE 11 - FIRE CASE EMISSIONS SUMMARY

Pollutant	Emissions, grams/second
Acrolein	0.97
CO	27.82
CO_2	1,159
Formaldehyde	0.26
HCl	2.04
HCN	0.99
HF	19.65
NH_3	0.40

TABLE 11 - FIRE CASE EMISSIONS SUMMARY	
Pollutant	**Emissions, grams/second**
NO_2	1.51
SO_2	2.77
Total Flow	**1,232**

Notes: All pollutants examined for toxicity except CO_2
Source: See Attachment 1 for detailed tables.

4.0 Modeling Results

The AERMOD computer model was run for both the non-fire and fire cases each using the 5 years of meteorological data (2 separate modeling runs). The pollutants discussed in Section 2 and Section 3 were examined. For NO_2, as the references utilized NO_2 emission estimates and not NO_x, complete conversion from NO_x was assumed and no NO_x tiering was conducted.

Results of the modeling are shown below in maximum distances from the source to exceed the health thresholds. Figures for selected pollutants are included in Attachment 2. Concentrations at each receptor are tabulated in Attachment 1.

4.1 Non-Fire Case

For the non-fire case, the results of AERMOD are shown in Table 12 below for all pollutants discussed in Section 2.1 and Section 3.1 for all health thresholds.

During a non-fire scenario, all but one of the pollutant concentrations would be below the AEGL-1 (1 hr) and IDLH at the receptors. However, NO_2 pollutant concentrations would exceed the AEGL-1 (1 hr) at some receptors in the vicinity of the project. As shown in Attachment 1, the worst-case modeled NO_2 concentration at the nearest receptor is 2,587 µg/m^3, which is above the NO_2 AEGL-1 (1 hr) of 941 µg/m^3, but remains well below the NO_2 AEGL-2 (1 hr) of 22,582 µg/m^3.

See Attachment 1 for a table of concentrations at receptors. See Figure 2 for a map of receptor locations and Attachment 2 for maps of impacts for those pollutants affecting receptors.

TABLE 12 - AERMOD MODELING RESULTS NON-FIRE CASE, DISTANCE, FEET				
Pollutant	**AEGL-1 (1 hr)**	**AEGL-2 (1 hr)**	**AEGL-3 (1 hr)**	**IDLH**
Benzene	ne	ne	ne	ne
CO	-	ne	ne	ne
HCl	182	ne	ne	ne
HCN	31	ne	ne	ne
HF	519	ne	ne	ne
NO_2	2,029	90	40	77
Toluene	ne	ne	ne	ne
Xylene	ne	ne	ne	ne

TABLE 12 - AERMOD MODELING RESULTS NON-FIRE CASE, DISTANCE, FEET				
Pollutant	**AEGL-1 (1 hr)**	**AEGL-2 (1 hr)**	**AEGL-3 (1 hr)**	**IDLH**

Notes: "ne" = the respective health threshold is not exceeded beyond 1 meter from the source. Values denoted as "-" do not have a health threshold for that value.
Source: See Attachment 2 for figures and Attachment 1 for values affecting receptors.

4.2 Fire Case

For the fire case, the results of the AERMOD modeling are shown in Table 13 below for all pollutants discussed in Section 2.2 and Section 3.2 and for all health thresholds.

During a fire scenario, there is substantial buoyancy and therefore close to ground level impacts are defined more by higher wind scenarios when the wind is able to bend over the plume towards the ground. None of the pollutants would exceed the AEGL or IDLH health thresholds at the closest receptor.

See Attachment 1 for estimated pollutant concentrations at receptors. See Figure 2 for a map of receptor locations.

TABLE 13 - AERMOD MODELING RESULTS FIRE CASE, DISTANCE, FEET				
Pollutant	**AEGL-1 (1 HR)**	**AEGL-2 (1 HR)**	**AEGL-3 (1 HR)**	**IDLH**
Acrolein	125	26	7	5
CO	-	7	ne	ne
HCl	10	ne	ne	ne
HCN	7	3	ne	ne
HF	297	10	7	10
NH_3	ne	ne	ne	ne
NO_2	16	ne	ne	ne
SO_2	46	14	ne	ne

Notes: "ne" = the respective health threshold is not exceeded beyond 1 meter from the source. Values denoted as "-" do not have a level of concern for that value.
Source: See Attachment 2 for figures and Attachment 1 for values affecting receptors.

4.3 Multiple Chemical Effects

When multiple pollutants share the same toxicological effect (the same "pathway", i.e. inhalation in this case), the effects can be additive. AEGLs do not explicitly calculate or predict the synergistic, antagonistic, or additive health effects of exposures to multiple pollutants. AEGLs are stand-alone values, designed mostly for a single-chemical release. A Hazard Index (HI) is often used for routine exposures to multiple pollutants as part of acute exposure assessment in health risk assessments (OEHHA 2015). An HI is defined as the sum of the hazard quotients for each pollutant, with the hazard quotient defined as the ratio of the pollutant concentration to the respective safe exposure thresholds. An HI greater than 1.0 indicates that the combined effects of the pollutants might exceed the safe exposure thresholds.

As there are multiple pollutants potentially emitted as part of this project, and receptors could be exposed to the multiple pollutants simultaneously, the HI approach using the AEGL values is a method that would allow for assessing the potential multiple pollutant effects. HI values are calculated at each of the sensitive receptors, as well as the maximum distance to an HI greater than 1.0, and shown in Table 14 and in Attachment 1.

TABLE 14 - HAZARD INDEX VALUES AT SENSITIVE RECEPTORS

Value	AEGL-1	AEGL-2
Maximum HI at a Sensitive Receptor	NO_2 HI = 2.75 HF HI = 0.46 HCl HI = 0.18 HCN HI = 0.05 Others < 0.001 Combined HI = 3.44	NO_2 HI = 0.11 CO HI = 0.021 HF HI = 0.019 HCl HI = 0.015 HCN HI = 0.014 Others < 0.001 Combined HI = 0.18
Maximum Distance to HI greater than 1.0	2,412 feet	183 feet

The pollutants contributing to an HI greater 1.0 at the closest receptor are listed along with inhalation health effects below.

- NO_2 contributes the most to the HI and has health effects of a respiratory irritant, causing airway inflammation, coughing, wheezing, and reduced lung function.
- HF causes irritation to the respiratory tract, eyes, and mucous membranes, potentially leading to fluid accumulation in the lungs.
- HCl irritates the nose, throat, and respiratory tract producing coughing, choking, hoarseness, and chest pain.
- HCN irritates the respiratory tract and triggers rapid, deep breathing (hyperpnea), followed quickly by slow, gasping breaths and potentially fluid in the lungs.
- CO triggers rapid, deep breathing (hyperpnea), followed quickly by slow, gasping breaths and potentially fluid in the lungs producing oxygen deprivation.

4.4 Flammability and Thermal Effects

The Compressed Gas Association (CGA) Publication P-23 provides algorithms for estimating the level of flammability of gas mixtures. The application of this technique to the non-fire off-gassed materials, as provided by the manufacturer as part of the UL9540A testing, indicates that the released vapor/gas would be flammable, with a Q value of over 11.7. This value exceeds the Q value flammability limit of 1.0, established by the CGA, indicating the materials are flammable (CGA 2015) with an estimated lower flammability limit of about 5.47 percent.

The off-gassed materials could generate a flammable vapor cloud and may produce a flammable gas mixture that could result in deflagration impacts. The CANARY© model was utilized to estimate the distance that the flammable vapor cloud could reach (see

Attachment 3 for the CANARY© outputs and assumptions). The lower flammability limit (LFL) and the ½ LFL were used as an estimate of the potential impacts from deflagration and flammable vapors. Distances for the LFL and the ½ LFL were estimated to extend to 14 and 24 feet, respectively. This distance would not extend outside of the project site boundaries and would not impact any offsite receptors.

Deflagration can also produce overpressure impacts. Explosion distances to a one psi overpressure assumed in CANARY© include a high level of material reactivity (due to the presence of hydrogen) and a high obstacle density (due to the location of multiple containers together), thereby increasing the potential for an explosion, under a conservative scenario. The one psi overpressure level(s) are those at which building glass would shatter or light injuries occur due to fragments (NFPA 2014). Vapor cloud explosion impacts were estimated to extend to 21 feet for a one psi overpressure. This distance would not extend outside of the project site boundaries and would not impact any offsite receptors.

Impacts from a fire could produce thermal radiation which could affect areas near the fire and areas off site. During the fire testing for the LG unit, thermal radiation effects were measured, with levels exceeding 90 kW/m^2 in close proximity to the unit. In order to estimate the thermal radiation at different distances from the units during a fire scenario, a point source model for thermal radiation was utilized (CCPS 2003) along with the results of the unit fire testing.

Heat flux impacts to humans can generally be tolerated below 5 kW/m^2 and below 10 kW/m^2 if sufficient time to escape is feasible. Heat flux levels that can produce spontaneous ignition in building materials generally do not occur below 12.5–20 kW/m^2. Estimates of heat flux levels exceeding 5 kW/m^2 could extend as far as 24 feet and those exceeding 12.5 kW/m^2 could extend as far as 15 feet. Heat flux levels would therefore not extend outside of the project site boundaries if a fire scenario were to occur at one of the units located at the nearest area to the site boundary (based on the 5 kW/m^2 exposure).

5.0 Frequency Analysis

The frequency analysis estimates the frequency (events per year, or duration between events) that an off-gassing incident could occur at a facility. Generally, the larger a facility and the more units installed, and the more MWh installed, the higher the frequency of an incident. The estimate is based on the installed operating sizes and duration in years (MWh-years) of installations, along with a listing of incidents that have occurred, to generate an estimated frequency of an incident.

This analysis utilized the United States Energy Information Administration (EIA) database of installed generation facilities from Form EIA-860 (EIA 2026), a form which all electrical generators and battery storage facilities are required to complete on a monthly basis. This is combined with a developed listing of battery incidents in the

United States (see Attachment 1) to estimate the frequency of a battery incident resulting in thermal off-gassing. The results are presented below.

5.1 Installed Base: EIA

Facilities that have battery storage report their storage capacity and installation date to the EIA monthly. From this information, the total MWh-years can be calculated for BESS in the United States. Table 15 provides a summary of the installed capacity by year.

TABLE 15 - EIA DATABASE INSTALLED BATTERY CAPACITY

Year	Cumulative operated MWh-years at Period End	MW Installed per Year	MWh-years of Operations for Facilities installed since Jan 1st of "Year"**
2026*	227,717	940	397
2025	220,088	15,587	23,086
2024	123,324	11,204	57,979
2023	65,136	7,045	80,640
2022	32,679	4,297	108,165
2021	13,576	3,432	141,587

Notes: * as of January 31, 2026.
** MWh-years operated since the first of the specified year. For example, in the last 3 years (since 1/1/2023), there has been a total of 80,640 MWH-years of operations that have occurred of facilities that were installed in the last 3 years.
Source: EIA 2026.

The BESS systems proposed for installation at Corby are LFP type. In general, LFP type batteries have been the primary battery type installed in the last three to five years. Note that as the EIA numbers are generated monthly, these estimates will change over time as operating experience grows and/or more incidents occur. As operating experience increases without any incidents, the incident frequency will decrease. If incidents occur in the future without substantial increases in operating experience, the incident frequency will increase.

5.2 Incident History

A history of battery incidents was compiled from a number of different sources, including the EPRI BESS Failure Incident Database, other studies' listings, and online searches. Attachment 1 lists the battery incidents compiled for this study. There are a total of 33 incidents identified since 2016 for all battery types (LFP and NMC primarily, including 3 incidents identified at the California Kern County Sanborn Facility based on County of Kern Fire Department reports from 2024 - the battery types have not yet been identified). Of facilities installed in the last three years, there has been only one incident at a facility using LFP batteries. Of facilities installed in the last five years, there have been eight incidents at a facility using LFP batteries.

Incidents in the database address all battery incidents, some of which most likely involved an initiating event, such as a manufacturing defect, that caused a fire, for

example, which subsequently caused failure of a protective feature, such as the ventilation system. Therefore, in most cases these incidents already include subsequent conditional probabilities, such as ventilation failures.

Incidents involve those that produce a fire and those that do not produce a fire. Based on a review of the incidents, for facilities installed in the last 5 years (8 incidents), an estimated 62.5 percent of incidents involved a fire. Over the last 10 years (33 incidents), 76 percent produced a fire.

5.3 Estimated Frequencies

Based on the number of incidents and the installed MWh-years, the estimated frequency of a unit undergoing thermal runaway and off-gassing is estimated. Table 16 shows the rate for LFP installations and incidents in the last three and five years.

In Table 16, the incident "rate" is calculated by dividing the total number of incidents by the total cumulative operations (MWh-years) to provide an estimate of the rate of incidents per MWh-year. MWh-years is a unit composed of the size of the installation, in MWh (megawatt hours), multiplied by the duration of operations in years. For example, if a 100 MWh facility operates for 5 years, then there are 500 MWh-years of operations.

TABLE 16 - ESTIMATED FREQUENCY OF THERMAL OFF-GASSING EVENTS

Factor	LFP Only, Installed in the Last 5 Years	LFP Only, Installed in the Last 3 Years
Number of incidents	8	1
Cumulative operations, MWh-years	106,190*	80,640
Rate - Incidents per MWh-years	7.53×10^{-5}	1.24×10^{-5}
LG JF2 5.1 single BESS unit Capacity, MWh	5.10	5.10
Frequency per LG single BESS unit, incidents per year	3.84×10^{-4}	6.32×10^{-5}
LG single BESS expected years between incidents	2,603	15,812
Corby Project proposed installed MWh	1,200	1,200
Corby Project Frequency of incidents, incidents per year	9.04×10^{-2}	1.49×10^{-2}
Corby Project expected years between incidents	11.06	67.20

Notes: * Assumes 75% of all operating years installed in the last 5 years are LFP-type systems and all systems installed in the last 3 years are LFP.
Source: see EIA database and database of incidents in Attachment 1.

Incidents associated with facilities installed only in the last three to five years are more applicable to this proposed project, as recent battery facilities implement newest technologies and safety measures. See **Section 4.4, Worker Safety and Fire Protection**, for a discussion of code and standards and a discussion of selected incidents. Table 16 presents the data for LFP type installations and utilizes only the facilities installed over the last three and the last five years. This is the most applicable to the current proposed installation of newer LFP BESS units. There has been only one incident identified at a facility installed in the last three years using LFP batteries (at

Melba, ID on 10/2/2023, where a fire was contained and allowed to burn out over 3 days, and air quality testing was conducted by the county [see **Section 5.10, Public Health**, for a more detailed discussion of the testing results]). Although only one incident for newer facilities is a good indication of the potentially decreasing trend of frequency of incidents with newer installations, a single incident is not sufficient to establish a trend. Therefore, the last five years are also shown.

Because BESS technologies and safety controls continue to evolve, the incident-frequency discussion and applicable prevention/response controls will change over time as additional operating experience, incident data, and manufacturer updates become available.

The dispersion modeling (discussed in Section 4) also allows for examining the "thresholds exceedance" which allows for determining how many hours in the 5 years of meteorological data create the conditions where the health thresholds would be exceeded at any point. For the closest receptor and the non-fire case, the model indicates that there would be a total of 301 hours during the 5-year period where the meteorological conditions allow the AEGL-1 (1 hr) to be exceeded if an incident is occurring. For all other hours, if an incident were to be occurring, health thresholds at the closest receptor would not be exceeded.

The frequency analysis is intended to provide a broad overview of the installed base of utility BESS systems and the number of incidents and the resulting frequency of incidents. Some of the incidents presented fewer impacts than those modeled in this analysis. Yet, for the fire-case modeling presented in Sections 2.0 through 4.0 where an entire unit is consumed by a fire over 6 hours, most of the incidents discussed in this section that involved fire also consumed the entire unit, but most occurred over a longer timeframe. However, the peak hour of fire most likely was similar to that modeled in this analysis.

For the non-fire case presented in Sections 2.0 through 4.0 where two racks are consumed over 10 hours, most incidents where a fire did not occur appear to have consumed fewer cells and/or occurred over a longer duration than the non-fire case examined herein. However, many of the fire cases may have had a period of non-fire off-gassing that could have presented similar dispersion characteristics as was modeled in this report, or the peak periods of the non-fire incidents could have presented similar characteristics.

In comparison, a substantial house fire (requiring fire department response) is estimated to occur about once every 350 years for a residence (NFPA 2013), or about once every 116 years for a neighbor to a residence (assuming 3 neighbors on 3 sides). An electric vehicle fire is estimated to occur about 25 times per 100,000 vehicles annually, or to occur once every 4,000 years per vehicle (Vinfastauto 2026).

6.0 Deposition

During any fire involving a building, a vehicle, or wildland, some deposition of particulates occurs in areas below the fire plume. This could cause elevated levels of contaminants deposited on the ground that could pose an environmental risk, such as to agricultural crops, dependent upon the nature of the contaminants. The details regarding modeling of this type of scenario are complex and require a number of assumptions, increasing uncertainty. Historical incidents where fires have occurred and sampling of soils has taken place (e.g., wildland-urban interface fire) allows for an estimate of the potential impacts of deposition. Soil sampling has the advantage over air sampling in that, once deposited, contaminants remain (unless rain or other disturbances occur) unlike air sampling, where, unless the sampling occurs during the event, results cannot be evaluated post-incident. These studies have demonstrated that the majority of the contaminants deposited are metals, inorganic compounds, and semi-volatile organic compounds. For the most part, volatile organic compounds and semi-volatile compounds do not deposit on the ground, but can mix with surface water. Also, while some stay in the air as gases, others adsorb to airborne particles or condense into organic films on the ground. For example, HF gas produced by a fire can deposit on the ground when it combines with moisture in the air or rain, settling through wet deposition particulate fluorides are removed from the atmosphere and deposited on land or surface water by wet and dry deposition (ATSDR 2003). However, HF deposited on the ground rapidly reacts with calcium or aluminum in the soil to form stable, solid fluorides. This effectively locks it into the ground, meaning it rarely leaches deeply or gets taken up into crops.

The possibility of a BESS fire depositing contaminants is a concern to the agricultural community in the nearby vicinity of a proposed project. Although BESS fires emit particulate matter primarily in the range of 13 to 349 microns (SFPE 2025), few studies exist where soil samples have been collected and analyzed. In one recent BESS fire case (2025 Moss Landing fire), three studies conducted sampling regarding the deposition of contaminants. The January 2025 Moss Landing BESS fire released smoke and ash that contained the heavy metals, cobalt, copper, nickel, and manganese into the atmosphere and involved a large number of BESS units and a building, thus combining fire-generated contaminants from a structure fire and a BESS fire. The combination of a BESS fire and a building fire, makes deposition related to only a BESS fire without a building (as would be the case with this project) more difficult to identify.

Terraphase (2025) prepared soil sampling information for the 2025 Moss Landing event, under the oversight of the Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board, Central Coast Region, sampling surface soil from 27 locations, examining metals, as well as lead, pH, and polycyclic aromatic hydrocarbons (PAH), dioxins, and furans. The analysis concluded that all concentrations of battery-related metals in soil identified fall within the range of background concentrations presented in established studies that define regional background concentrations in California soils.

Another study by SJSU (Scientific Report 2025) also examined surface deposition of metals in the estuary around the Moss Landing incident (a few kilometers from the incident). The study revealed a "significant but transient surface enrichment of nickel (Ni), manganese (Mn), and cobalt (Co)." Note the battery type was NMC – Nickel Manganese Cobalt (not LFP as proposed for this project). Subsurface (greater than 5 mm deep) samples showed no increase. Surface concentrations (of Ni, Mn, Co) measured were elevated compared to pre-fire levels indicating that the deposition associated with the fire was initially confined to the top layer of soil, and increases in median values on the surface increased from background by 1.7 to 4.0 times. Based on the SFPE 2025 study approach to examining earthworm toxicity (see below) and the soil depths, median values for Ni, Mn and Co were below the EC_{50} (concentration where there is either a 50 percent reduction in growth, growth rate, or immobilization) for earthworm toxicity. Peak values for Ni and Mn were above the EC_{50} values, indicating that some toxicity could have occurred.

Cahn (2025) also examined deposition of metals from the same event. Soil samples were collected from fields which had not been disturbed by tillage since the fire. Samples of the soil were collected from three locations at each site and composited from depths of 0 to 1 inch; 3 to 4 inches; and 0 to 12 inches. The sample from 0 to 1 inch depth would presumably contain potential deposition of metals from the fire. Of the six sample sites closest to the battery fire location (1.30 to 1.83 miles away), the study indicated that a slight deposition of metals (Copper and Manganese) may have occurred in one agricultural field, but the increases measured in the surface samples were likely insignificant relative to normal background levels for these soil types. Other sites showed no increase in heavy metals on the soil surface.

While the battery type was different for the Vistra Moss Landing incident than proposed for this project, using nickel manganese cobalt (NMC) batteries instead of LFP, the results of no potential impact above background in the first two studies would still be applicable. The SR 2025 study indicates deposition of lithium (the iron and phosphate in the LFP are naturally occurring and are plant nutrients, without toxicity thresholds, and are therefore not addressed), if deposited at the same rates as the Vistra fire pollutants and as identified in the SJSU study, could exceed EC_{50} values for earthworm toxicity. However, the Vistra fire was substantially larger than a single unit, encompassing a building and multiple units reportedly consuming 55 percent of the batteries onsite; therefore, the deposition of lithium would most likely be much lower with a single, outdoor unit involved as would be the case with this project.

SFPE 2025 conducted modeling of fire case pollutant deposition. The results of the modeling indicated that levels that could affect earthworms above EPA effective concentration (EC_{50}) levels would be confined to 60 meters (~197 feet) from the source.

AERMOD modeling was performed for this project that addressed a potential fire incident (see Section 2.3). This modeling was conducted utilizing the dry particle

deposition analysis provided in the AERMOD model to estimate the amount of particle deposition to the ground that could occur given a fire incident. The SFPE 2025 study (SFPE Table 21 Particle Size Distribution for LFP and SFPE Table 23 Particle Composition for Flaming) were utilized to estimate the particle size distribution, composition and density. The SFPE 2025 study estimated that lithium composition of total particulates would be 20.4 percent and aluminum composition to be 3.9 percent of the total particle composition. Other compositions included iron and soot, neither of which were determined to present environmental toxicity issues.

Deposition results using AERMOD and the SFPE 2025 values for particulate production during the fire case, along with size distribution and composition, result in the deposition plot shown in Attachment 2. Peak deposition of total particulates at the project boundary range as high as 88.3 g/m^2 of total particulate to the west of the closest unit to the boundary, with 18.0 g/m^2 (20.4 percent) being lithium and 3.4 g/m^2 (3.9 percent) being aluminum. These deposition values are for the 6-hour fire case. A discussion, risk assessment, and conclusions describing a *less than significant* impact on nearby orchards can be found in **Section 5.8, Land Use and Agriculture**.

7.0 Conclusions

The analysis examines potential downwind concentrations of pollutants caused by a potential thermal off-gassing event, for periods when there is no fire (non-fire case), and for periods when there is a fire (fire case). For the non-fire case, only one of the pollutant concentrations emitted, NO_2, would exceed AEGL-1 (1 hr) at the closest receptor. No other pollutants would exceed AEGL-1 (1 hr) at the closest receptor. And no pollutants, including NO_2, would exceed AEGL-2 or AEGL-3 (1 hr) or IDLH at the closest receptor.

For the fire case, none of the pollutant concentrations would exceed the incident release health thresholds (AEGLs and IDLHs) at the closest receptor.

For the frequency of events for newer, LFP-type systems, the duration between events is estimated to be between 11 and 67 years, depending on the timeframe examined. The 67-year estimate is based on only a single event occurring in facilities installed in the last 3 years, suggesting a downward trend in incidents, although the data is not extensive enough to make any definitive conclusions. The 11-year duration is based on LFP-type facilities installed in the last 5 years (8 incidents).

Significance criteria and determination of impacts are discussed separately and can be found in **Section 5.10, Public Health** and in **Section 5.8, Land Use**.

8.0 References

ATSDR 2003. *Toxicological profile for Fluorides, Hydrogen Fluoride, and Fluorine,* U.S. Department of Health and Human Services, Agency for Toxic Substances and Disease Registry. September. Available online at: https://www.atsdr.cdc.gov/toxprofiles/tp11.pdf

Cahn 2025, Evaluation of Heavy Metals in Agricultural Fields following the Moss Landing Battery Fire. Michael D Cahn and Richard F Smith. Accessed July 2026 https://ucanr.edu/blog/salinas-valley-agriculture/article/evaluation-heavy-metals-agricultural-fields-following-moss

Canary© Modeling 2024, Quest Consultants. Available online at: https://www.questconsult.com/software/canary/

CCPS 2003, Guidelines for Fire Protection in Chemical, Petrochemical, and Hydrocarbon Processing Facilities, August 2003, https://onlinelibrary.wiley.com/doi/book/10.1002/9780470925041

CGA 2015, Compressed Gas Association, Publication P-23, Standard For Categorizing Gas Mixtures Containing Flammable And Nonflammable Components - 4th Edition. Available online at: https://webstore.ansi.org/standards/cga/cga232015

DNVGL 2017, Considerations for ESS Fire Safety Consolidated Edison New York, NY, Report No.: OAPUS301WIKO(PP151894), Rev. 3, January 18th, 2017, accessed July 2026, https://www.dnv.com/cases/considerations-for-battery-storage-safety-in-new-york-89392/

DNVGL 2019, Maritime Battery Safety Joint Development Project Technical Reference for Li-ion Battery Explosion Risk and Fire Suppression, Report No.: 2019-1025, Rev. 4, Document No.: 1144K9G7-12, Date: 2019-11-01, Accessed July 2026, https://www.dnv.com/publications/technical-reference-for-li-ion-battery-explosion-risk-and-fire-suppression-165062/

EIA 2026, Energy Information Administration, March 2026 Form EIA-860 database through January 2026. Available online at: https://www.eia.gov/electricity/data/eia860/

EPA 2025, Acute Exposure Guideline Levels (AEGLs) Values. Available online at: https://www.epa.gov/aegl/access-acute-exposure-guideline-levels-aegls-values#chemicals

EPRI 2020, Summary of Prior Electrochemical Battery Fire Emissions Characterization Studies, December 2020, Accessed July 2026, https://www.epri.com/research/products/000000003002018741

EST 2026, Laboratory Analysis of VOC Emissions from Structural Materials in Wildland–Urban Interface Fires, Environ. Sci. Technol. 2026, 60, 7251−7259, Accessed July 2026, https://pubs.acs.org/doi/10.1021/acs.est.5c11276

FMGlobal 2021, Environmental Impact of Residential Fires Review, Christopher J. Wieczorek, PhD, Accessed July 2026, https://www.fm.com/-/media/project/publicwebsites/fm/files/resources/research-technical-reports/environmental-impact-of-residential-fires.pdf

Franqueville 2023, JLP-D-23-00370, Journal of Loss Prevention in the Process Industries, Data-driven modeling of downwind toxic gas dispersion in lithium-ion battery failures using computational fluid dynamics, Juliette I. Franqueville, Erik J. Archibald and Ofodike A. Ezekoye., Accessed July 2026, https://www.sciencedirect.com/science/article/abs/pii/S0950423023002310

Hynynen 2023 Analysis of combustion gases from large-scale electric vehicle fire tests, Fire Safety Journal 139 (2023) 103829, Accessed July 2026, https://www.sciencedirect.com/science/article/pii/S0379711223000978

Journal of Energy Storage (JES) 2024, Review of gas emissions from lithium-ion battery thermal runaway failure Considering toxic and flammable compounds. Peter J. Bugryniec, Erik G. Resendiz, Solomon M. Nwophoke, Simran Khanna, Charles James, Solomon F. Brown. Accessed July 2026, https://www.sciencedirect.com/science/article/pii/S2352152X24008739

Journal of Power Sources (JPS) 2025, Comparative fire hazards of lithium-ion battery chemistries: Linking thermal behavior, gas toxicity, and state-of-charge to composite risk profiles. Aamir Iqbal, Ashish Kakoria, Syed Talha Riaz, Jingmin Xu, Robert Illango Pushparaj, Guang Xu, Accessed July 2026, https://ui.adsabs.harvard.edu/abs/2025JPS...65537914I/abstract

Larsson 2017, Toxic fluoride gas emissions from lithium-ion battery fires. Fredrik Larsson, Petra Andersson, Per Blomqvist & Bengt-Erik Mellander. Published 30 August 2017. Accessed July 2026, https://www.nature.com/articles/s41598-017-09784-z

Larsson 2014, Characteristics of lithium-ion batteries during fire tests. Fredrik Larsson, Petra Andersson, Per Blomqvist, Anders Loren, Bengt-Erik Mellander. Published 15 August 2014. Accessed July 2026, https://www.sciencedirect.com/science/article/abs/pii/S0378775314012828

NFPA 2013, National Fire Protection Association, Home Structure Fires, Marty Ahrens, April 2013, https://www.nfpa.org/

NFPA 2014, National Fire Protection Association, Separation Distances in NFPA Codes and Standards, https://www.nfpa.org/

NFPA 2026, National Fire Protection Association, Standard for the Installation of Stationary Energy Storage Systems, accessed June 2026, https://www.nfpa.org/codes-and-standards/nfpa-855-standard-development/855

Nilsson 2024, Gas Emissions from Lithium-Ion Batteries: A Review of Experimental Results and Methodologies, Batteries 2024, 10, 443, Accessed July 2026, https://www.mdpi.com/2313-0105/10/12/443

OEEHA 2015, Office Of Environmental Health Hazard Assessment, California, Risk Assessment Guidelines Guidance Manual for Preparation of Health Risk Assessments, February 2015, Accessed July 2026, https://oehha.ca.gov/sites/default/files/media/downloads/crnr/2015guidancemanual.pdf

Ramboll 2024, Offsite Consequence Analysis Vistra Morro Bay Battery Energy Storage System (BESS) Project, March 2024, project number 1690027676. Prepared by Shari Beth Libicki, Biljana Cosic, Shirley Lam, Volodymyr Shatokha, Farzan Oroumiyeh. Accessed July 2026, https://neveragainmosslanding.org/wp-content/uploads/2025/04/Vistra-Morro-Bay-OCA-Ramboll-March-2024.pdf

Scientific Report (SR) 2025, SJSU, Coastal wetland deposition of cathode metals from the world's largest lithium-ion battery fire, (2025) 15:42113, Accessed July 2026, https://elkhornslough.org/files/publications/Aiello_et_al-2025-Scientific_Reports_Battery_Fire.pdf

SFPE 2025, Environmental and Health Impacts of Thermal Runaway Events in Outdoor Lithium-Ion Battery Energy Storage System Installations, June 2025. Jamie L. McAllister, Brendan McCarrick, and Zelda Q. Zhao. https://doi.org/10.64167/3d04-pax1

Terraphase 2025, Revised Sampling Report, Vicinity of Moss Landing Power Plant, Moss Landing, California. October 17, 2025. Available online at: https://www.readymontereycounty.org/home/showpublisheddocument/143458/638990015667570000

TT 2026c – Tetra Tech (TN 268368). Project Description Update #2, Part 1, Appendix 2-C. Dated January 30, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

TT 2026e – Tetra Tech (TN 268433). Project Description Update #2, Part 2. Dated February 2, 2026. Accessed online at: https://efiling.energy.ca.gov/Lists/DocketLog.aspx?docketnumber=24-OPT-05

Vinfastauto 2026, https://community.vinfastauto.us/driving/the-fire-rate-of-electric-vehicles-is-61-times-lower-than-that-of-gasoline-vehicles/

Attachment 1

Tables

Attachment 1 Tables

Table of Contents

Table **Page**

Potential Pollutants Health Thresholds ..... Att 1 – 1

Potential Pollutants Other Studies: Non-Fire Case ..... Att 1 – 3

Potential Pollutants Other Studies: Fire Case ..... Att 1 – 4

Emissions: LG JF2 Non-Fire Case ..... Att 1 – 5

Emissions: LG JF2 Fire Case ..... Att 1 – 6

Flammability Calculations ..... Att 1 – 7

Buildings Calculations ..... Att 1 – 8

Thermal Calculations ..... Att 1 – 9

US Battery Incidents ..... Att 1 – 10

Modeling Results Impact Distances Non-Fire Case ..... Att 1 – 13

Modeling Results Impact Distances Fire Case ..... Att 1 – 14

Modeling Results Receptor Concentrations Non-Fire Case ..... Att 1 – 15

Modeling Results Receptor Concentrations Fire Case ..... Att 1 – 16

Modeling Results Graphs Non-Fire Case ..... Att 1 – 17

Modeling Results Graphs Non-Fire Case (larger scale) ..... Att 1 – 18

Modeling Results Graphs Fire Case ..... Att 1 – 19

Modeling Results HI calculations Non-Fire case ..... Att 1 - 20

Modeling Results HI calculations Fire case ..... Att 1 - 21

Potential Pollutants Health Thresholds

Pollutant	MW	Conversion ppm/ (mg/m3)	AEGL-1 1hr, ppm	AEGL-2 1hr, ppm	AEGL-3 1hr, ppm	ERPG-1 ppm	ERPG-2 ppm	ERPG-3 ppm	IDLH, ppm
Benzene	78.11	0.31	52	800	4000	50	150	1000	500
Carbon monoxide (CO)	28.01	0.87	NA	83	330	200	350	500	1,200
Hydrogen Chloride (HCL)	36.46	0.67	1.8	22	100	3	20	150	50
Hydrogen Cyanide (HCN)	27.03	0.90	2	7.1	15	NA	10	25	50
Hydrogen Fluoride (HF)	20.01	1.22	1	24	44	2	20	50	30
Nitrogen Dioxide (NO2)	46.01	0.53	0.5	12	20	1	15	30	13
Toluene	92.14	0.27	67	560	3700	50	300	1000	500
Xylene	106.16	0.23	130	920	2500	NA	NA	NA	1000
Styrene	104.15	0.23	20	130	1100	50	250	1000	700
Sulfur Dioxide (SO2)	64.06	0.38	0.2	0.75	30	0.3	3	25	100
Acrolein	56.064	0.44	0.03	0.1	1.4	0.05	0.15	1.5	2
Formaldehyde (MW=30)	30	0.82	0.9	14	56	1	10	40	20
Ammonia (NH3)	17.031	1.44	30	160	1100	25	150	1500	300

https://www.epa.gov/aegl/access-acute-exposure-guideline-levels-aegls-values#chemicals

https://erpg.aiha.org/Content/ERPG.cfm

$$\text{ppm} = \frac{\text{mg/m}^3 \times 24.45}{MW}$$

Potential Pollutants Health Threshold

Pollutant	AEGL-1 ug/m3	AEGL-2 ug/m3	AEGL-3 ug/m3	ERPG-1 ug/m3	ERPG-2 ug/m3	ERPG-3 ug/m3	IDLH, ug/m3
Benzene	166,124	2,555,746	12,778,732	159,734	479,202	3,194,683	1,597,342
Carbon monoxide (CO)		95,085	378,049	229,121	400,961	572,802	1,374,724
Hydrogen Chloride (HCL)	2,684	32,807	149,121	4,474	29,824	223,681	74,560
Hydrogen Cyanide (HCN)	2,211	7,849	16,583		11,055	27,638	55,276
Hydrogen Fluoride (HF)	818	19,642	36,010	1,637	16,368	40,920	24,552
Nitrogen Dioxide (NO2)	941	22,582	37,636	1,882	28,227	56,454	24,463
Toluene	252,490	2,110,364	13,943,476	188,425	1,130,552	3,768,507	1,884,254
Xylene	564,450	3,994,569	10,854,806				4,341,922
Styrene	85,194	553,763	4,685,685	212,986	1,064,928	4,259,714	2,981,800
Sulfur Dioxide (SO2)	524	1,965	78,601	786	7,860	65,501	262,004
Acrolein	69	229	3,210	115	344	3,440	4,586
Formaldehyde (MW=30)	1,104	17,178	68,712	1,227	12,270	49,080	24,540
Ammonia (NH3)	20,897	111,450	766,221	17,414	104,485	1,044,847	208,969

Potential Pollutants Other Studies: Non-Fire Case

Compound	JES 2024, g/kWh, pg 12, max from graph	Franqueville, mg/Wh, LFP, fig3, Tbl2	Franqueville, %, Tbl 3	SFPE 2025 Vol %, Tbl 12	SFPE 2025 g/s for a Unit, Tbl 12	DNVGL Tbl 3-1 Vol % range	UL9540A Cell Tests Vol %
Benzene				7.50	3.26		0.09
CO	120	0.10%	60%		2.28	7.6-26.1	10.00
CO2					16.34	20.2-63.4	
Toluene						0.0-0.7	0.01
Xylene							0.01
HCL				1.90	0.39	0.2-2.1	
HCN				0.50	0.08	0.0-0.7	
HF	250	56.8	3.4	2.70	0.30	0.1-3.7	
NO2				7.90	2.02	1.3-9.7	
Acrolein	none found in LFP studies						
Formaldehyde	none found in LFP studies						
POF3	none found in LFP studies						
COF2	none found in LFP studies						

Note: Cells highlighted are those used in this study

Potential Pollutants, Other Studies: Fire Case

Compound	SFPE, 2025, g/s, 2hr, Tbl 14	Ramboll 2024, mg/kg, Tbl 3-4 (max values)	Ramboll 2024, mg/kg, Tbl 3-2/3 used by Applicant 2026	Ramboll 2024, g/s, Tbl 4-1	SFPE, 2025, Yield, mg/g, 2hr, Tbl 14	Larsson, 2017, mg/Wh Peak	Larsson, 2017, ppm Peak	Larsson, 2014, mg/Wh	Franqueville, kg/kg, Tbl 3	EPRI 2020, Tbl 6	JPS 2025, LFP, L/kWh
CO	50.7	46228		3.0	35.1					250 ppm	44
CO2	212.5				1463				53%		302
HCL	1	2575	1651.5	54.1	0.7					600 ppm/kg	
HCN		1253	658.5	1.5						100 ppm/kg	0.3 (fig12)
HF	35.8	11320	3078.75	13.3	24.8	198	220	120	0.163	175 mg/Wh	3.0 (fig13)
NO2	2.7				1.9					12.5 mg/m3	
Acrolein											3.0 (fig11)
Formaldehyde											1.5 (fig10)
NH3	0.7				0.5						13.0 (fig7)
SO2	5.1				3.5						
H2	none found in LFP studies										
Benzene	none found in LFP studies										
Toluene	none found in LFP studies										
COF2	none found in LFP studies										
Xylene	none found in LFP studies										

Note: Cells highlighted are those used in this study

LG JF2 Battery System: 2026 - Non-Fire Scenario

Toxic Emission Calcs LFP

Pollutant	Vol %	Volume (Liter)	MW (g/mol)	Single Cell Emissions (grams)	Single Cell Rate (g/s)	Single Cell Rate (lbs/hr)	Full Rate (g/s)	Full Rate (lbs/hr)
Primary Compounds								
H2	59.30	38.0	2.0	3.1	0.0019	0.0152	0.29	2.2996
CO	10.00	6.4	28.0	8.0	0.0049	0.0392	0.75	5.9259
CO2	22.40	14.3	44.0	28.2	0.0174	0.1380	2.63	20.8593
CH4	3.68	2.4	16.0	1.7	0.0010	0.0082	0.16	1.2461
C2H2, C2H4	2.69	1.7	28.1	2.2	0.0013	0.0106	0.20	1.5998
C2H6	0.53	0.3	30.1	0.5	0.0003	0.0022	0.04	0.3376
C3H6	0.26	0.2	42.1	0.3	0.0002	0.0015	0.03	0.2317
C3H8	0.12	0.1	44.1	0.2	0.0001	0.0007	0.014	0.1120
C4	0.40	0.3	58.1	0.7	0.0004	0.0033	0.06	0.4919
C5	0.62	0.4	72.2	1.3	0.0008	0.0063	0.12	0.9474
Total	100.00	64	16.2	46.0	0.0284	0.2252	4.29	34.0512
Trace compounds	**ppm**	**MW**	**Vol (L)**					
Benzene	900	78.1	0.06	0.20	1.2E-04	9.8E-04	0.019	1.5E-01
Toluene	100	92.1	0.01	0.03	1.6E-05	1.3E-04	0.0024	1.9E-02
Xylene	100	106.2	0.01	0.03	1.9E-05	1.5E-04	0.0028	2.2E-02
HCL	19000	36.5	1.22	1.97	1.2E-03	9.6E-03	0.18	1.5E+00
HCN	5000	27.0	0.32	0.38	2.4E-04	1.9E-03	0.04	2.8E-01
HF	27000	20.0	1.73	1.53	9.5E-04	7.5E-03	0.14	1.1E+00
NO2	79000	46.0	5.06	10.32	6.4E-03	5.1E-02	0.96	7.6E+00
Trace Compounds Total			8.39	14.46			1.3495	10.7102
All Compounds							5.64	44.76

Vol % and total volume provided by manufacturer from Cell Level testing

Volume based on cell level testing report, L

Time of event (cell), minutes	27	*UL testing venting started at 23 min and ended at 50 min (27 min each cell)*
Number of cells in CONTAINER that offgas	3360	Full rate includes 2 racks
Time of CONTAINER event, minutes	600	10 hours for 2 racks
Volume flowrate, m3/s	0.007	
total gas production rate, L/wH	0.14	*based on cell size and volume*
total gas production rate, g/wH	0.12	
total gas production rate, L/Ah	0.40	*159.2 Ah*
Gas produced per Unit, L	243,232	
Gas production rate, L/s	6.8	*for entire scenario, 2 racks*
CO2 heat of combustion, kJ/g	13.3	*from SFPE 2026 report*
Total Heat Rate, kJ/Wh	1.5	*for entire scenario, 2 racks*
Mass lost, kg	203.0	
HF, mg/Wh	3.0	

Fire Case Pollutants

LG JF2 5.1

Compounds	Rate	Units	MW (if Applicable)	Total Emissions (grams)	Full Unit Rate (g/s)	Full Unit Rate (lbs/hr)
HCL	2575	mg/kg	-	4.4E+04	2.04	16.1
HCN	1253	mg/kg	-	2.1E+04	0.99	7.8
HF	24800	mg/kg	-	4.2E+05	19.65	155.2
NO2	1900	mg/kg	-	3.3E+04	1.51	11.9
Particulate (deposition only)	56000	mg/kg	-	9.6E+05	44.38	350.4
Acrolein (MW=56)	3.0	L/kWh	56.0	2.1E+04	0.97	7.7
Formaldehyde (MW=30)	1.5	L/kWh	30.0	5.6E+03	0.26	2.1
NH3	500	mg/kg	-	8.6E+03	0.40	3.1
SO2	3500	mg/kg	-	6.0E+04	2.77	21.9
CO	35100	mg/kg	-	6.0E+05	27.82	219.6
CO2	1463000	mg/kg	-	2.5E+07	1159.46	9153.6
Total emissions					1265.46	1.0E+04

Emission Rate, g/Wh	3.35	SFPE 2025
Duration, minutes	360	SFPE 2025 low end
Unit size in fire, Wh	5,110,000	LG 5.1 entire unit
Total emissions, kg	17,119	calculated, from battery (not including air)
Loss Emission Rate, g/s	793	calculated, from battery (not including air)
Temperature of gas, K	499	low end of range, SFPE

Battery Malfunction Flammability Analysis: LG JF2 LFP Cell

CGA P-23 Method

Component	Mole %	MW	Wt %	LEL	NFN2: Non-Flamm in Nitrogen*	Mole% x NFN2	Mole Frac/LFL
H2	59.30	2	7.30	4.0	5.7	10.40	14.83
N2	0	28	0.00	-			0.00
CO2	22.40	44	60.68	-			0.00
CO	10.00	28	17.24	12.5	20	0.50	0.80
Ch4	3.68	16	3.63	5	14.3	0.26	0.74
C2	3.22	30	5.95	3	12	0.27	1.07
C3	0.38	44	1.03	2.1	6.5	0.06	0.18
C4	0.40	58	1.43	1.8	5.6	0.07	0.22
C5+	0.62	72	2.75	1.4	4.4	0.14	0.44
Total	100	16.2	100		Q factor =	11.70	
Frac flamm	77.60		39.32		LFL =		5.47

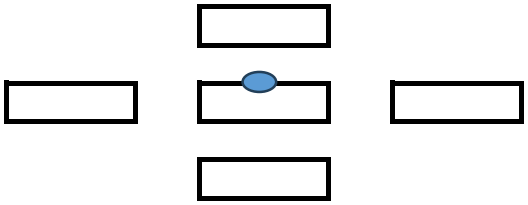
* From CGA P-23 Table 1

LFL estimated based on Le Chatelier's formula

Buildings

only within 5x release height as per AERMOD

Single Cabinets to the west, east, south and north



		X	Y
Release point, m		595429	4249980
Cabinet size, m		7.17	2.57
Cabinet Spacing, m		2	
Unit 1: Release cabinet points			
	1	595425.4	4249980
	2	595432.6	4249980
	3	595432.6	4249977.4
	4	595425.4	4249977.4
Unit 2: West cabinet points			
	1	595416.2	4249980.0
	2	595423.4	4249980.0
	3	595423.4	4249977.4
	4	595416.2	4249977.4
Unit 3: East cabinet points			
	1	595434.6	4249980.0
	2	595441.8	4249980.0
	3	595441.8	4249977.4
	4	595434.6	4249977.4
Unit 4: South cabinet points			
	1	595425.4	4249975.4
	2	595432.6	4249975.4
	3	595432.6	4249972.9
	4	595425.4	4249972.9
Unit 5: North cabinet points			
	1	595425.4	4249984.6
	2	595432.6	4249984.6
	3	595432.6	4249982.0
	4	595425.4	4249982.0

Thermal Calculations

point source model

based on LG Fire Test

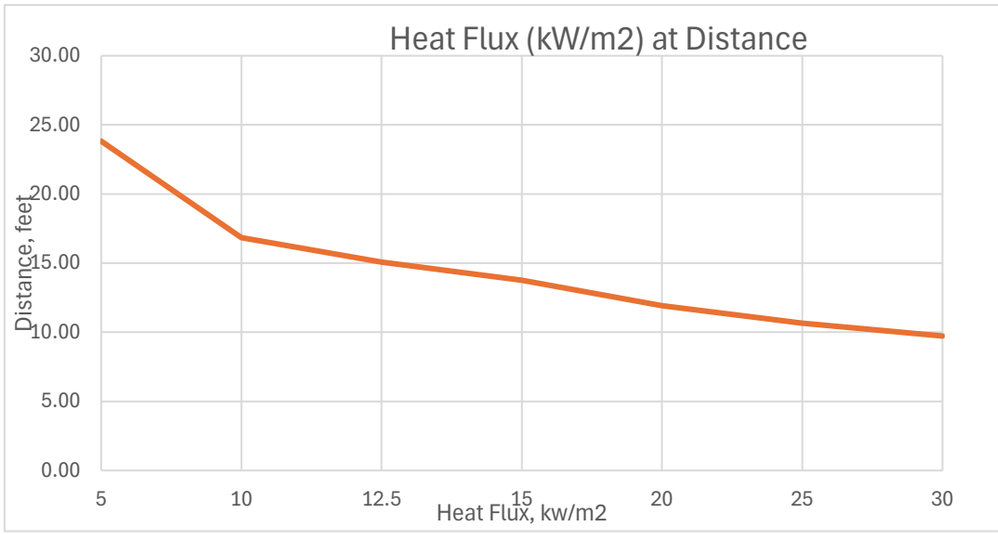
Peak Heat Release Rate Calculation, Point Source, Unit testing

HF1-HF3	HF4-HF6	HF7-HF9	
10.00	**5.00**	**1.00**	**Distance, ft**
28.38	48.7	90.92	**q, heat flux, KW/m2**
3.0	1.5	0.3	**R, distance, meters**
0.35	0.35	0.35	**Pr, energy fraction released as radiation, value conservative as per SFPE 1999**
9,466.4	4,061.1	303.3	**P, peak heat release rate, KW, calculated**

Heat Flux Peak using Point Source Model

Using Peak Release heat rate, KW

Kw/M2	Distance, ft
5	23.82
10	16.85
12.5	15.07
15	13.75
20	11.91
25	10.65
30	9.73



US Battery Incidents

Location	Battery Description	Battery Type	Incident Date	Incident Year	Fire/ Explosion	Description	Source	EIA Entity ID	EIA Plant ID	Year Installed
AZ, Maricopa County, Chandler, Dorman Battery Storage Project	LG Chem (NMC), Dorman AES, Fluence Energy, 10 MW / 40MWh	NMC	4/18/2022	2022	F	The site used LiB. It is not known how many batteries were caught on fire, but the facility held 3,000 batteries inside the warehouse. Unknown cause, 14-day duration. Facility owner/operator: AES	EPRI Incident Report, AZ Central; Ramboll 2024	61482	61861	2019
AZ, Maricopa County, Peoria; Bolster Subtation Battery Sytem	Li ion (LFP), Tesla. 25 MW/100 MWh	LFP	10/1/2025	2025	F	A fire occurred in a Megapack at the Bolster Substation Battery owned by Salt River Project (SR), adjacent to the Agua Fria Generation Station. Firefighters cooled adjacent Megapacks with water, and the fire was allowed to burn out under controlled conditions. No outages were associated with the incident.	EPRI Incident Report, AZ Family	16572	141	2021
AZ, Maricopa County, Surprise, McMicken	LG Chem (NMC), Rack level runaway, 2 MW	NMC	4/19/2019	2019	E	Cascading thermal runaway in a single rack caused explosion. Explosion occurred approximately 3 hours after the thermal runaway began. One out of the 27 racks of batteries caught on fire, unknown duration. Cause: internal cell defect. 4 firefighters injured due to explosion, chemical inhalation and burns. Arizona Public Service MckMicken Battery Energy Storage Facility.	ACP 2025; NFPA 2025; Ramboll 2024; SFPE 2025	803	?	NA
CA, Humboldt County, Rio Dell	Lead Acid, Narada	Lead Acid	8/3/2022	2022	E	Explosion. Nearby building damage. Lead acid batteries used to store solar energy exploded. The single enclosure of batteries had its roof blown. It is unclear how many batteries were inside the single enclosure. Unknown cause, 21-min duration. Battery storage container at Rio Dell RV Park.	EPRI Incident Report, KRCR; Ramboll 2024	Not listed	Not listed	NA
CA, Monterey County, Moss Landing, Vistra	LG Energy Solution (NMC), Fluence. 300 MW / 1200 MWh	NMC	9/4/2021	2021	F	Scorched racks, melted wires. The 2021 & 2022 fires that occurred were at the same site and both used LiBs. This site was the Vistra Moss Landing Phase I and II. The type of batteries was confirmed by the DOE Global Energy Storage Database. The 2021 incident detected smoke near 4 enclosures and caused a loss of about 7% of the battery modules (almost 7,000 modules or 320 racks). Cause: Smoke from a failed bearing in an air-handling unit in the building triggered a heat suppression system tospray water onto the LiB racks, which resulted in overheating and creating more smoke. Note: entities Vistra and Dynegy have merged.	EPRI Incident Report, Vistra; NFPA 2025; Ramboll 2024	54802	260	2021
CA, Monterey County, Moss Landing, Vistra	LG Energy Solution (NMC), 100 MW / 400 MWh	NMC	2/13/2022	2022	F	Burnt racks. According to the news report, there were 10 burnt racks and the fire suppression system activated. Cause: see 2021 incident description.	EPRI Incident Report, KSBW News, Ramboll 2024	54802	260	2021
CA, Monterey County, Moss Landing, Vistra; Battery Energy Storage Facility	LG Energy Solution (NMC), Fluence. 300 MW / 1200 MWh	NMC	1/16/2025	2025	F	A fire broke out in Vistra's 300 MW / 1200 MWh Phase I BESS plant. 80% of batteries were burnt. Firefighters are using a "monitor and contain" approach and allowing the fire to burn itself out. The police issued evacuation orders and closed two nearby roads and a highway, and the local school district closed all schools for one day. The US EPA, the Monterey Bay Air Resources District, and Vistra monitored air quality in and around the fire perimeter and across Monterey County, and found that levels of Hydrogen Fluoride (HF) remained below acute Reference Exposure Level thresholds. Moss Landing Marine Laboratories found elevated levels of nickel, cobalt, and manganese in soil samples at concentrations roughly 100 to 1,000 times higher than normal. The Moss Landing site is home to two separately owned BESS systems: PG&E's Elkhorn system, and Vistra's Moss Landing systems (Phase I, II, and III). The Phase I Vistra system experienced an incident in 2021 and came back online in 2022.	EPRI Incident Report, Mercury News; NFPA 2025	54802	260	2021
CA, Monterey County, Moss Landing; PG&E; Elkhorn Battery Energy Storage Facility	PG&E, Tesla, 256 Megapacks. 183 MW / 730 MWh	NMC	9/20/2022	2022	F	Fire in one Tesla Megapack unit at PG&E Elkhorn Battery Storage facility. Coolant failure was the cause. 18-hr duration.	EPRI Incident Report, KSBW News; NFPA 2025; Ramboll 2024; SFPE 2025	14328	62564	2022
CA, Monterey County, Parkfield; Arevon; California Flats Solar Project	LFP (Tesla started switching to LFP around 2021). 60 MW/240 MWh	LFP	8/30/2025	2025	F	A fire occurred at the California Flats Energy Storage Project, which is co-located with a 208 MW solar plant. The fire damaged 4 out of 84 Megapacks. 5 residences within a 2-mile radius were evacuated. The fire was allowed to burn out under controlled conditions.	EPRI Incident Report, Monterey County Sheriff's Office	61230	63930	2021
CA, Orange County, Santa Ana; Convergent; Orange County Energy Storage 2	NMC (maybe, not clear [EPRI Incident Report])	NMC	7/17/2024	2024	F	A BESS fire occurred in an industrial area, leading to a 1-hour evacuation in the area due to smoke.	EPRI Incident Report, OC Register	61978	62497	2021

US Battery Incidents

Location	Battery Description	Battery Type	Incident Date	Incident Year	Fire/ Explosion	Description	Source	EIA Entity ID	EIA Plant ID	Year Installed
CA, San Diego County, Escondido; SDG&E; Northeast Operations Center	NMC, AES Energy Storage. 30 MW/120 MWh	NMC	9/5/2024	2024	F	One of 24 containers caught fire. The fire started at noon on 9/5/24, and was extinguished by 1 AM on 9/6/24. Air quality and water runoff reports were made publicly available after the incident, and found that all readings taken were well below acceptable exposure limits and considered expected readings during a routine structure fire.	ACP 2025; EPRI Incident Report, San Diego Union-Tribune	16609	60570	2017
CA, San Diego County, Kearny Mesa	LFP, Fluence. 20 MW/80 MWh	LFP	4/29/2024	2024		A safety incident occurred at the Kearny South Energy Storage Facility. The 20 MW / 80 MWh Kearny system consists of the Kearny North Energy Storage Facility and Kearny South Energy Storage Facility, both located at the same substation.	EPRI Incident Report, CPUC Draft Resolution ESRB-13	16609	64614	2022
CA, San Diego County, Otay Mesa; REV Renewables; Gateway Energy Storage Facility	LG Chem (NMC), LS Power, NEC Energy Solutions. 250 MW/250 MWh	NMC	5/15/2024	2024	F	The Gateway Energy Storage Facility was involved in a fire, and water was pumped into the building's fire suppression system to extinguish it. A 600-foot safety barrier was maintained for over 22 hours due to air monitors showing high levels of hydrogen. A drone and unmanned robot were been used to monitor the fire, measure air quality and take temperature readings, and firefighters opened the building once heat was no longer detected. A shelter in place order and an evacuation warning were sent out as a precaution. The fire was declared extinguished the next day, but reignited several times until the fire department left the scene nearly 17 days later. Fire, nearly 17 days after the fire broke out. Cal Fire officials estimated that crews sprayed 8 million gallons of water onto the site. The county's hazmat team tested water runoff and no toxic levels were reported. The crew also monitored smoke around the area and no dangerous levels were reported.	EPRI Incident Report, San Diego Union-Tribune	63512	63834	2020
CA, San Diego County, Valley Center	LG Energy Solution (NMC), Terra-Gen. 139 MW/560 MWh	NMC	4/5/2022	2022		Damage to single battery module within a rack in one enclosure. LiB storage meant to provide 140 MW for 4 hours. Water cascade over single enclosure triggered by nearby prescribed burn.	ACP 2025; EPRI Incident Report, Valley Road Runner; Ramboll 2024; SFPE 2025	65552	66500 or 66502?	NA
CA, San Diego County, Valley Center; Terra-Gen; Valley Center Energy Storage Center	LG Energy Solution (NMC), Terra-Gen. 140 MW/560 MWh	NMC	9/18/2023	2023	F	Single enclosure, damage to single container. A battery storage unit caught fire. Unknown cause, 45-min duration. This is the 2nd event that this system has experienced, the first event was on April 5, 2022.	SFPE 2025. EPRI Incident Report, Valley Road Runner; Ramboll 2024	65552	66500 or 66502?	NA
FL, Lee County, Bonita Springs	NA	NA	4/28/2021	2021	F	Lithium batteries at e2comply LLC warehouse were caught on fire; over 1 hour duration. Unknown cause.	Ramboll 2024	Not listed	Not listed	NA
ID, Canyon County, Melba	Powin Energy (LFP) 2 MW/8 MWh	LFP	10/2/2023	2023	F	Battery fire at the substation was reported, leading to road closures. The fire was contained and allowed to burn out over 3 days, and air quality testing was conducted by the county. The substation remained operational through the fire. Several stacks appeared to be burnt. Cause: defect in unit for water intrusion.	ACP 2025; EPRI Incident Report, KTVB7; SFPE 2025	9191	66329	2025
IL, La Salle County, Invenergy's Grand Ridge Energy Storage Facility	Invenergy, BYD. 12.2 MW/31.5 MWh	NA	7/19/2021	2021		Located on 25th Road, west of the La Salle Generation Station nuclear power plant.	S&P Global 2022	49893	59957	2013
IL, La Salle County, LaSalle	Sinexcel [LFP], Energport. 36 MW/36 MWh	LFP	7/19/2021	2021	F	One container at a BESS plant caught fire. The fire was extinguished later the same day.	EPRI Incident Report, WSPY	Not listed?	NA	2019

US Battery Incidents

Location	Battery Description	Battery Type	Incident Date	Incident Year	Fire/ Explosion	Description	Source	EIA Entity ID	EIA Plant ID	Year Installed
MI, Arenac County, Standish	NMC	NMC	4/19/2021	2021	F	Fire. Sparks were seen coming out of a BESS container. A fire broke out, and was limited to one container. LiB was observed to catch on fire by a worker during installation or testing (unclear).	EPRI Incident Report, WSGW	Not listed	Not listed	NA
NV, Clark County, Boulder City; Townsite Solar Facility	Li ion (LFP), Tesla. 90 MW/360 MWh	LFP	9/23/2025	2025	F	A fire occurred in a Megapack at a BESS facility co-located with a 194 MW solar plant. The fire propagated to one other Megapack. The two Megapacks burned over the course of 6 hours, after which the fire department turned over the site to the site owner to monitor the ongoing smoldering. 2 out of 114 Megapacks burned. Townsite Solar Facility.	EPRI Incident Report, KTNV	60387	60654	2021
NY, Jefferson County, Chaumont	General Electric (NMC), Convergent Energy and Power. 5 MW/15 MWh BESS	NMC	7/27/2023	2023	F	Fire was reported in an outdoor storage facility co-located with solar PV. A shelter-in-place order was issued for the surrounding community within 1 mile of the facility. A cargo container of lithium ion batteries caught on fire. The batteries were used to store electricity from a solar farm. No information was given as to the size of the batteries. Unknown cause, 6-day duration. Jefferson County. Owner: Convergent Energy and Power	ACP 2025; EPRI Incident Report, 7 News WWNYTV; SFPE 2025	Convergent not listed. All 4 Jefferson County entities/plants are at the same coordinates.	NA	NA
NY, Orange County, Warwick	Powin Energy (LFP), Convergent Energy and Power. 8 MW/36 MWh	LFP	6/26/2023	2023		This event is one half of a larger simultaneous failure across 2 discrete sites in Warwick, NY. Both sites deployed the new "Centipede" model from Powin and both failures seemed to have occured within 24 hours of each other. The failure appeared to occur during a large storm that affected both sites in Warwick. Multiple racks destroyed. ~3-day duration. Located near the Warwick Valley Central School District's transportation building. (41.252158, -74.383553)	ACP 2025; EPRI Incident Report, Convergent Energy and Power; Ramboll 2024	Not listed	Not listed	2022
NY, Orange County, Warwick	Powin Energy (LFP), Convergent Energy and Power. 4 MW/18 MWh. 6 POWIN, 53' Cenitpieds	LFP	6/27/2023	2023		This event is one half of a larger simultaneous failure across 2 discrete sites in Warwick, NY. Both sites deployed the new "Centipede" model from Powin and both failures seemed to have occured within 24 hours of each other. The failure appeared to occur during a large storm that affected both sites in Warwick. It is unclear if this site experienced a fire, but the system "was experiencing problems" and fire alarms were triggered. The batteries were later removed from the site to be disposed of. (41.252158, -74.383553)	ACP 2025; EPRI Incident Report, Convergent Energy and Power; SFPE 2025	Not listed	Not listed	2022
NY, Orange County, Warwick	LFP, Convergent, Powin	LFP	12/19/2025	2025	F	A fire occurred at the West Warwick 3 Battery Storage Facility located at 28 Church Street (41.258654, -74.350567 ?). The fire was limited to one container, and there were no reported injuries. The BESS was fully charged when the incident occurred, and the SOC was reduced to 50% as a safety measure. Air monitoring was conducted for three days after the start of the incident. One container burned.	EPRI Incident Report, Energy Storage News	Not listed	Not listed	2022
NY, Suffolk County, East Hampton	LG Chem (NMC), Haugland Energy Group. 5 MW/40 MWh	NMC	5/31/2023	2023	F	Single enclosure. A 'smoldering battery' was reported, closing down roads and stopping train service for about an hour until the fire was contained. NextEra reported that an internal sprinkler system contained the fire. 5-MW LiB storage system caught fire; unknown cause, 2-hr duration.	ACP 2025; EPRI Incident Report, East Hampton Star; Ramboll 2024; SFPR 2025	62652	62733	2018
OR, Washington County, Hillsboro	LMO	LMO	5/22/2025	2025	F	A fire occurred in the battery room of a Hillsboro data center; the Digital Realty Data Cener at 6675 NE 62nd Ave. The fire was extinguished after 5 hours.	EPRI Incident Report, FOX 12	Not listed. 15248 nearby but discrete	Not listed. 67712 nearby but discrete	NA
OR, Washington County, Tualatin	NA	NA	4/12/2019	2019	F	Six large LiBs were on fire in a warehouse located on the 20000 block of Southwest 115th Ave. No information was available for the capacity of the batteries. The cause is not known, but it occurred during testing.	Ramboll 2024	Not listed	Not listed	NA
WI, Milwaukee County, Franklin	NA	NA	8/10/2016	2016	F	A shipping container that contained partially-assembeled system of LiBs were on fire. Fire began in one of the power and control compartments. Unknown duration.	Ramboll 2024	Not listed	Not listed	NA
WY, Yellowstone National Park	LFP	LFP	9/6/2022	2022		Smoke was seen coming from a building housing a solar plus storage system; small building near the bookstore (near 44.415786, -110.573443). West Thumb Geyser Basin was closed for 6 days following the incident. Exterior of building was undamaged. Northwestern Energy solar powered microgrid that supplies energy to the bookstore.	EPRI Incident Report, National Park Service	Not listed	Not listed	2020

Impact Distances: Non-Fire Case

from AERMOD runs and plot files

Max Distances, feet

	AEGL-1	AEGL-2	AEGL-3	ERPG-1	ERPG-2	ERPG-3	IDLH
Benzene	0	0	0	0	0	0	0
CO	-	0	0	0	0	0	0
HCL	182	0	0	80	0	0	0
HCN	31	0	0	-	0	0	0
HF	519	0	0	250	0	0	0
NO2	2,029	90	40	1,274	60	29	77
Toluene	0	0	0	0	0	0	0
Zylene	0	0	0	-	-	-	0

Impact Distances: Fire Case

from AERMOD runs and plot files

Max Distances, feet

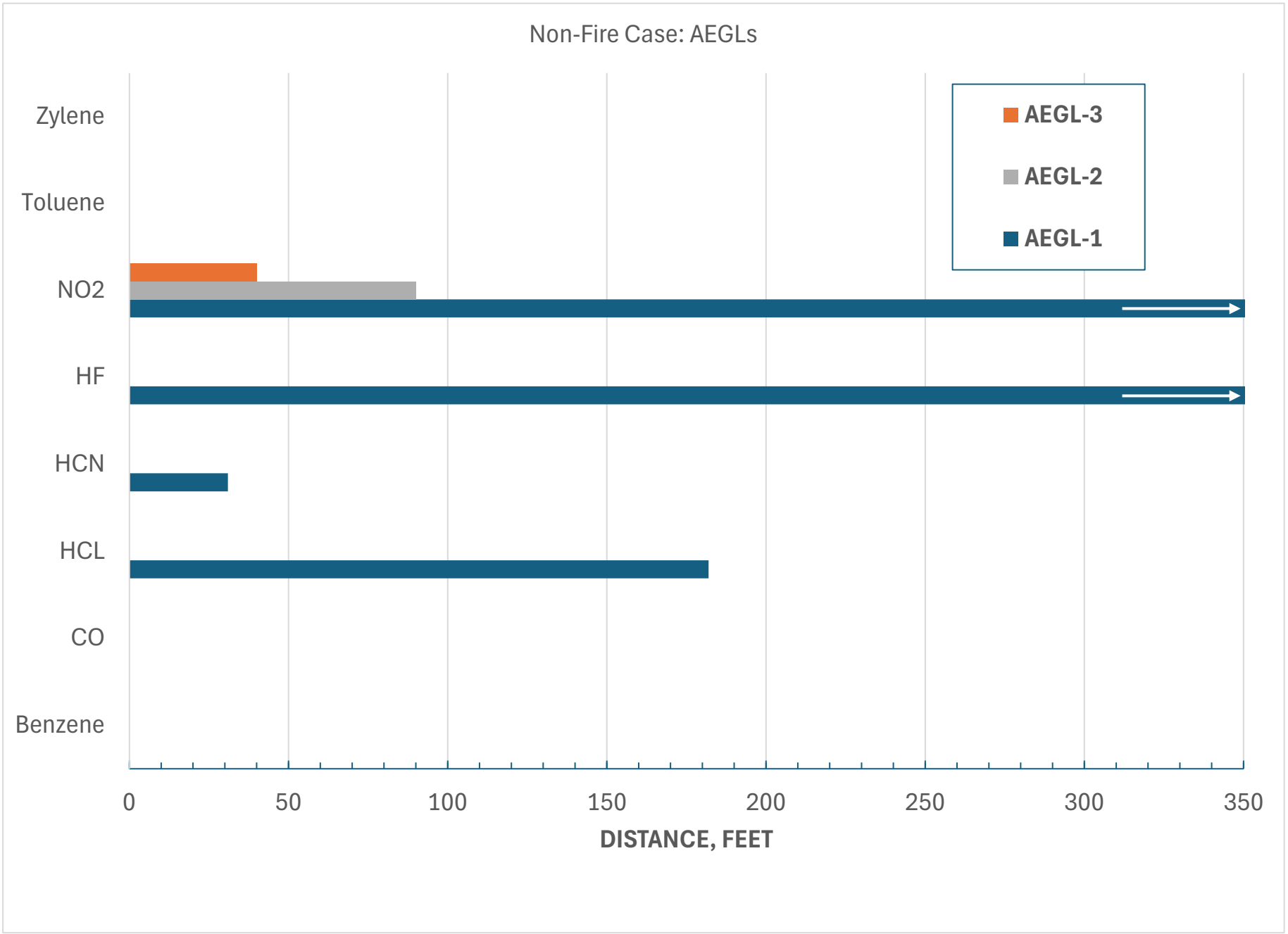
	AEGL-1	AEGL-2	AEGL-3	ERPG-1	ERPG-2	ERPG-3	IDLH
Acrolein	125	26	7	86	20	7	5
CO	-	7	0	3	0	0	0
HCL	10	0	0	7	0	0	0
HCN	7	3	0	0	0	0	0
HF	297	10	7	103	14	7	10
NH3	0	0	0	0	0	0	0
NO2	16	0	0	10	0	0	0
POF3	14	0	0	-	-	-	0
SO2	46	14	0	23	7	0	0

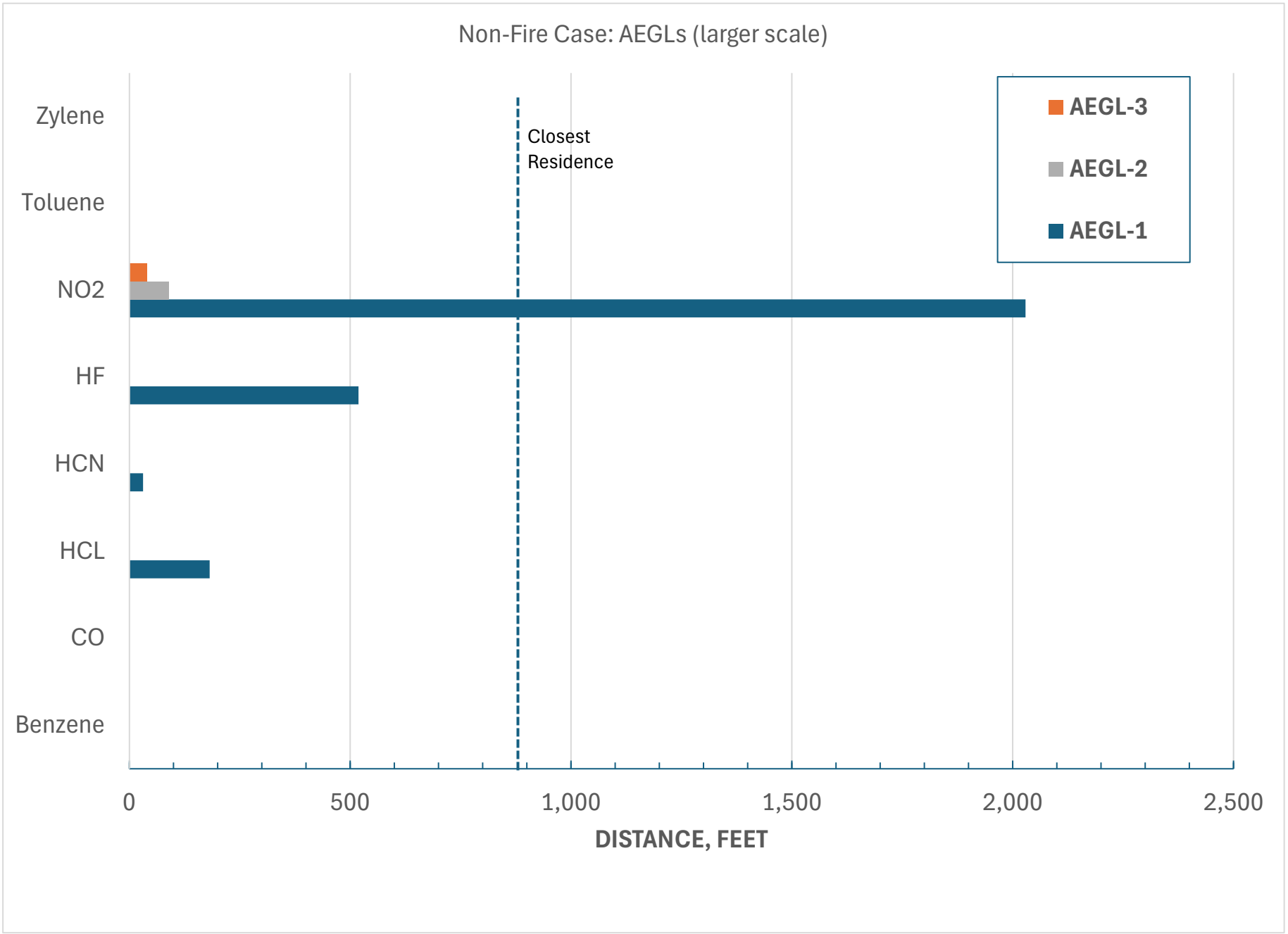
Receptor Concentrations Non-Fire Case

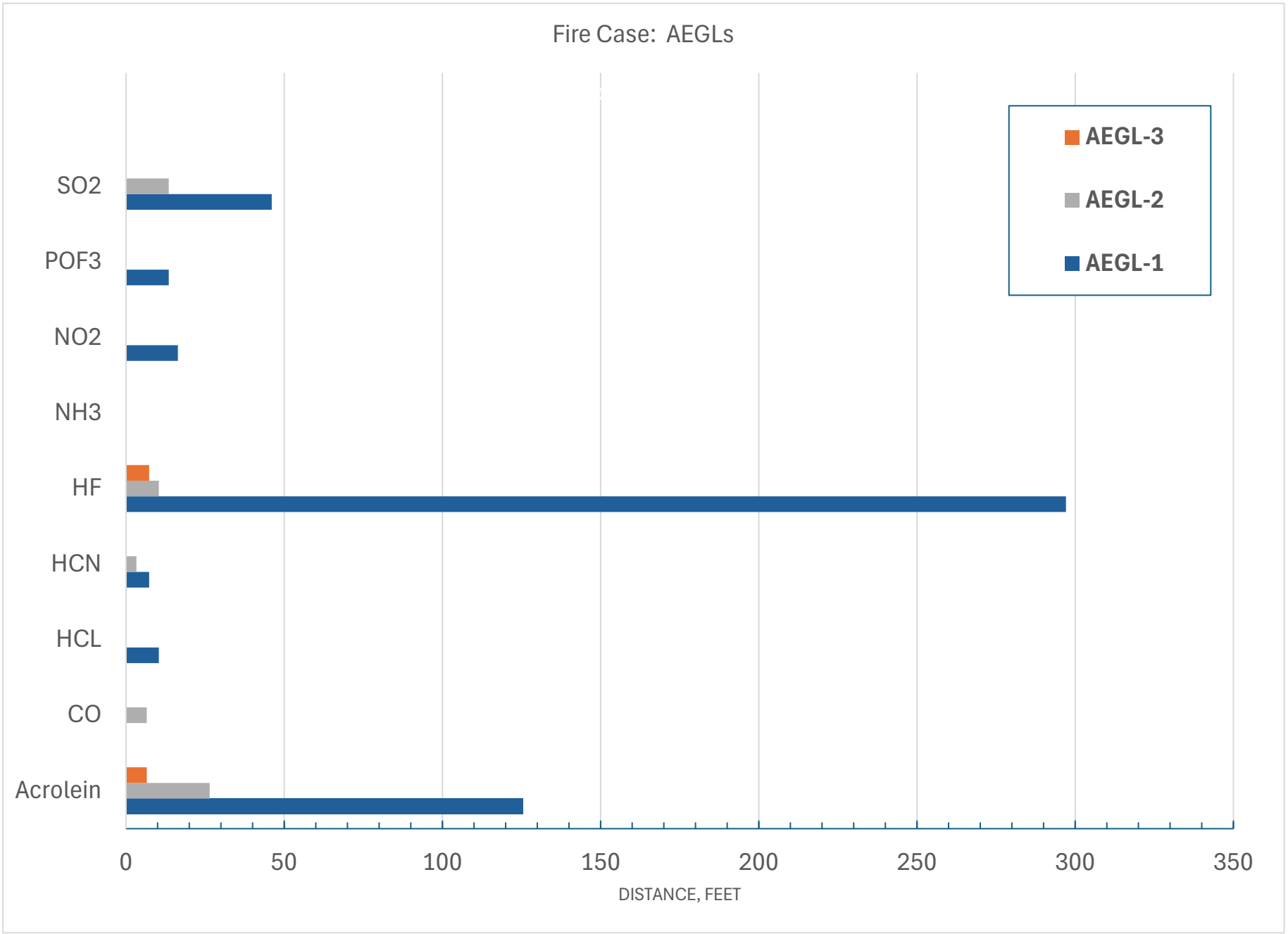
Pollutant	North 1 ug/m3	North 2 ug/m3	North 3 ug/m3	North 4 ug/m3	East 1 ug/m3	East 2 ug/m3	East 3 ug/m3	South 1 ug/m3	South 2 ug/m3	South 3 ug/m3	South 4 ug/m3	West 1 ug/m3
Benzene	51.2	22.1	22.4	15.7	12.6	7.1	9.1	43.7	14.4	12.2	9.1	29.2
CO	2021.5	871.2	882.4	619.0	495.4	282.1	360.6	1725.6	567.0	480.3	357.6	1153.7
HCL	485.2	209.1	211.8	148.6	118.9	67.7	86.6	414.1	136.1	115.3	85.8	276.9
HCN	107.8	46.5	47.1	33.0	26.4	15.0	19.2	92.0	30.2	25.6	19.1	61.5
HF	377.3	162.6	164.7	115.5	92.5	52.7	67.3	322.1	105.8	89.7	66.8	215.4
NO2	2587.5	1115.1	1129.5	792.3	634.1	361.1	461.6	2208.8	725.7	614.8	457.7	1476.7
Toluene	6.5	2.8	2.8	2.0	1.6	0.9	1.2	5.5	1.8	1.5	1.1	3.7
Zylene	7.5	3.3	3.3	2.3	1.8	1.1	1.3	6.4	2.1	1.8	1.3	4.3

Receptor Concentrations Fire Case

Pollutant	North 1 ug/m3	North 2 ug/m3	North 3 ug/m3	North 4 ug/m3	East 1 ug/m3	East 2 ug/m3	East 3 ug/m3	South 1 ug/m3	South 2 ug/m3	South 3 ug/m3	South 4 ug/m3	West 1 ug/m3
Acrolein	3.1	1.9	2.3	1.9	2.3	1.7	2.2	4.1	2.6	5.4	2.5	1.5
CO	89.9	55.6	67.0	54.3	66.9	48.9	63.2	116.7	75.4	154.6	73.0	43.9
HCL	6.6	4.1	4.9	4.0	4.9	3.6	4.6	8.6	5.5	11.3	5.4	3.2
HCN	3.2	2.0	2.4	1.9	2.4	1.7	2.2	4.2	2.7	5.5	2.6	1.6
HF	63.5	39.3	47.3	38.3	47.3	34.6	44.6	82.4	53.3	109.2	51.6	31.0
NH3	1.3	0.8	1.0	0.8	1.0	0.7	0.9	1.7	1.1	2.2	1.1	0.6
NO2	4.9	3.0	3.6	2.9	3.6	2.7	3.4	6.3	4.1	8.4	4.0	2.4
POF3	16.8	10.4	12.5	10.1	12.5	9.1	11.8	21.8	14.1	28.9	13.7	8.2
SO2	9.0	5.5	6.7	5.4	6.7	4.9	6.3	11.6	7.5	15.4	7.3	4.4


Non-Fire Case: AEGLs
Zylene
Toluene
NO2
HF
HCN
HCL
CO
Benzene
AEGL-3
AEGL-2
AEGL-1
0
50
100
150
200
250
300
350
DISTANCE, FEET


Non-Fire Case: AEGLs (larger scale)
Zylene
Toluene
NO2
HF
HCN
HCL
CO
Benzene
Closest
Residence
AEGL-3
AEGL-2
AEGL-1
0
500
1,000
1,500
2,000
2,500
DISTANCE, FEET


Fire Case: AEGLs
AEGL-3
AEGL-2
AEGL-1
SO2
POF3
NO2
NH3
HF
HCN
HCL
CO
Acrolein
0
50
100
150
200
250
300
350
DISTANCE, FEET

NON-FIRE CASE

HI Max Distances to greater than HI=1.0

	Meters	Feet
AEGL1	735	2412
AEGL2	56	183

HI calcs at Receptors

	North 1	North 2	North 3	North 4	East 1	East 2	East 3	South 1	South 2	South 3	South 4	West 1
HI calc: AEGL1												
Benzene	0.00031	0.00013	0.00013	0.00009	0.00008	0.00004	0.00005	0.00026	0.00009	0.00007	0.00005	0.00018
CO	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
HCL	0.18075	0.07789	0.07890	0.05534	0.04430	0.02522	0.03225	0.15429	0.05069	0.04294	0.03197	0.10315
HCN	0.04876	0.02101	0.02128	0.01493	0.01195	0.00680	0.00870	0.04162	0.01368	0.01159	0.00863	0.02783
HF	0.46108	0.19870	0.20127	0.14118	0.11300	0.06434	0.08226	0.39359	0.12932	0.10955	0.08156	0.26313
NO2	2.75007	1.18514	1.20043	0.84205	0.67397	0.38377	0.49061	2.34751	0.77130	0.65339	0.48647	1.56944
Toluene	0.00003	0.00001	0.00001	0.00001	0.00001	0.00000	0.00000	0.00002	0.00001	0.00001	0.00000	0.00001
Zylene	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Sum	3.44	1.48	1.50	1.05	0.84	0.48	0.61	2.94	0.97	0.82	0.61	1.96
HI calc: AEGL2												
Benzene	0.00002	0.00001	0.00001	0.00001	0.00000	0.00000	0.00000	0.00002	0.00001	0.00000	0.00000	0.00001
CO	0.02126	0.00916	0.00928	0.00651	0.00521	0.00297	0.00379	0.01815	0.00596	0.00505	0.00376	0.01213
HCL	0.01479	0.00637	0.00646	0.00453	0.00362	0.00206	0.00264	0.01262	0.00415	0.00351	0.00262	0.00844
HCN	0.01374	0.00592	0.00600	0.00421	0.00337	0.00192	0.00245	0.01173	0.00385	0.00326	0.00243	0.00784
HF	0.01921	0.00828	0.00839	0.00588	0.00471	0.00268	0.00343	0.01640	0.00539	0.00456	0.00340	0.01096
NO2	0.11459	0.04938	0.05002	0.03509	0.02808	0.01599	0.02044	0.09781	0.03214	0.02722	0.02027	0.06539
Toluene	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Zylene	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
Sum	0.18	0.08	0.08	0.06	0.04	0.03	0.03	0.16	0.05	0.04	0.03	0.10

FIRE CASE

HI Max Distances to greater than HI=1.0

	meters	feet
AEGL1	212	696
AEGL2	24	79

HI calcs at Receptors

	North 1	North 2	North 3	North 4	East 1	East 2	East 3	South 1	South 2	South 3	South 4	West 1
HI Calcs AEGL1												
Acrolein	4.5E-02	2.8E-02	3.4E-02	2.7E-02	3.4E-02	2.5E-02	3.2E-02	5.9E-02	3.8E-02	7.8E-02	3.7E-02	2.2E-02
CO	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00	0.0E+00
HCL	2.5E-03	1.5E-03	1.8E-03	1.5E-03	1.8E-03	1.3E-03	1.7E-03	3.2E-03	2.1E-03	4.2E-03	2.0E-03	1.2E-03
HCN	1.4E-03	9.0E-04	1.1E-03	8.7E-04	1.1E-03	7.9E-04	1.0E-03	1.9E-03	1.2E-03	2.5E-03	1.2E-03	7.1E-04
HF	7.8E-02	4.8E-02	5.8E-02	4.7E-02	5.8E-02	4.2E-02	5.5E-02	1.0E-01	6.5E-02	1.3E-01	6.3E-02	3.8E-02
NH3	6.2E-05	3.8E-05	4.6E-05	3.7E-05	4.6E-05	3.4E-05	4.3E-05	8.0E-05	5.2E-05	1.1E-04	5.0E-05	3.0E-05
NO2	5.2E-03	3.2E-03	3.9E-03	3.1E-03	3.9E-03	2.8E-03	3.6E-03	6.7E-03	4.4E-03	8.9E-03	4.2E-03	2.5E-03
POF3	4.0E-03	2.4E-03	2.9E-03	2.4E-03	2.9E-03	2.2E-03	2.8E-03	5.1E-03	3.3E-03	6.8E-03	3.2E-03	1.9E-03
SO2	1.7E-02	1.1E-02	1.3E-02	1.0E-02	1.3E-02	9.3E-03	1.2E-02	2.2E-02	1.4E-02	2.9E-02	1.4E-02	8.3E-03
sum	0.15	0.09	0.11	0.09	0.11	0.08	0.11	0.20	0.13	0.26	0.12	0.07
HI Calcs AEGL2												
Pollutant												
Acrolein	1.4E-02	8.5E-03	1.0E-02	8.3E-03	1.0E-02	7.4E-03	9.6E-03	1.8E-02	1.1E-02	2.4E-02	1.1E-02	6.7E-03
CO	9.5E-04	5.9E-04	7.0E-04	5.7E-04	7.0E-04	5.1E-04	6.6E-04	1.2E-03	7.9E-04	1.6E-03	7.7E-04	4.6E-04
HCL	2.0E-04	1.2E-04	1.5E-04	1.2E-04	1.5E-04	1.1E-04	1.4E-04	2.6E-04	1.7E-04	3.5E-04	1.6E-04	9.8E-05
HCN	4.1E-04	2.5E-04	3.0E-04	2.5E-04	3.0E-04	2.2E-04	2.9E-04	5.3E-04	3.4E-04	7.0E-04	3.3E-04	2.0E-04
HF	3.2E-03	2.0E-03	2.4E-03	2.0E-03	2.4E-03	1.8E-03	2.3E-03	4.2E-03	2.7E-03	5.6E-03	2.6E-03	1.6E-03
NH3	1.2E-05	7.2E-06	8.6E-06	7.0E-06	8.6E-06	6.3E-06	8.2E-06	1.5E-05	9.7E-06	2.0E-05	9.4E-06	5.7E-06
NO2	2.2E-04	1.3E-04	1.6E-04	1.3E-04	1.6E-04	1.2E-04	1.5E-04	2.8E-04	1.8E-04	3.7E-04	1.8E-04	1.1E-04
POF3	1.6E-04	1.0E-04	1.2E-04	9.9E-05	1.2E-04	9.0E-05	1.2E-04	2.1E-04	1.4E-04	2.8E-04	1.3E-04	8.0E-05
SO2	4.6E-03	2.8E-03	3.4E-03	2.8E-03	3.4E-03	2.5E-03	3.2E-03	5.9E-03	3.8E-03	7.8E-03	3.7E-03	2.2E-03
sum	0.023	0.014	0.017	0.014	0.017	0.013	0.016	0.030	0.020	0.040	0.019	0.011

Attachment 2

Figures

Attachment 2 Figures

Table of Contents

Table **Page**

AERMOD Receptor Grid ..... Att 2 – 1

AERMOD Receptor Grid Near ..... Att 2 – 2

Receptors..... Att 2 – 3

Non-Fire Case: HF Emissions Contours ..... Att 2 – 4

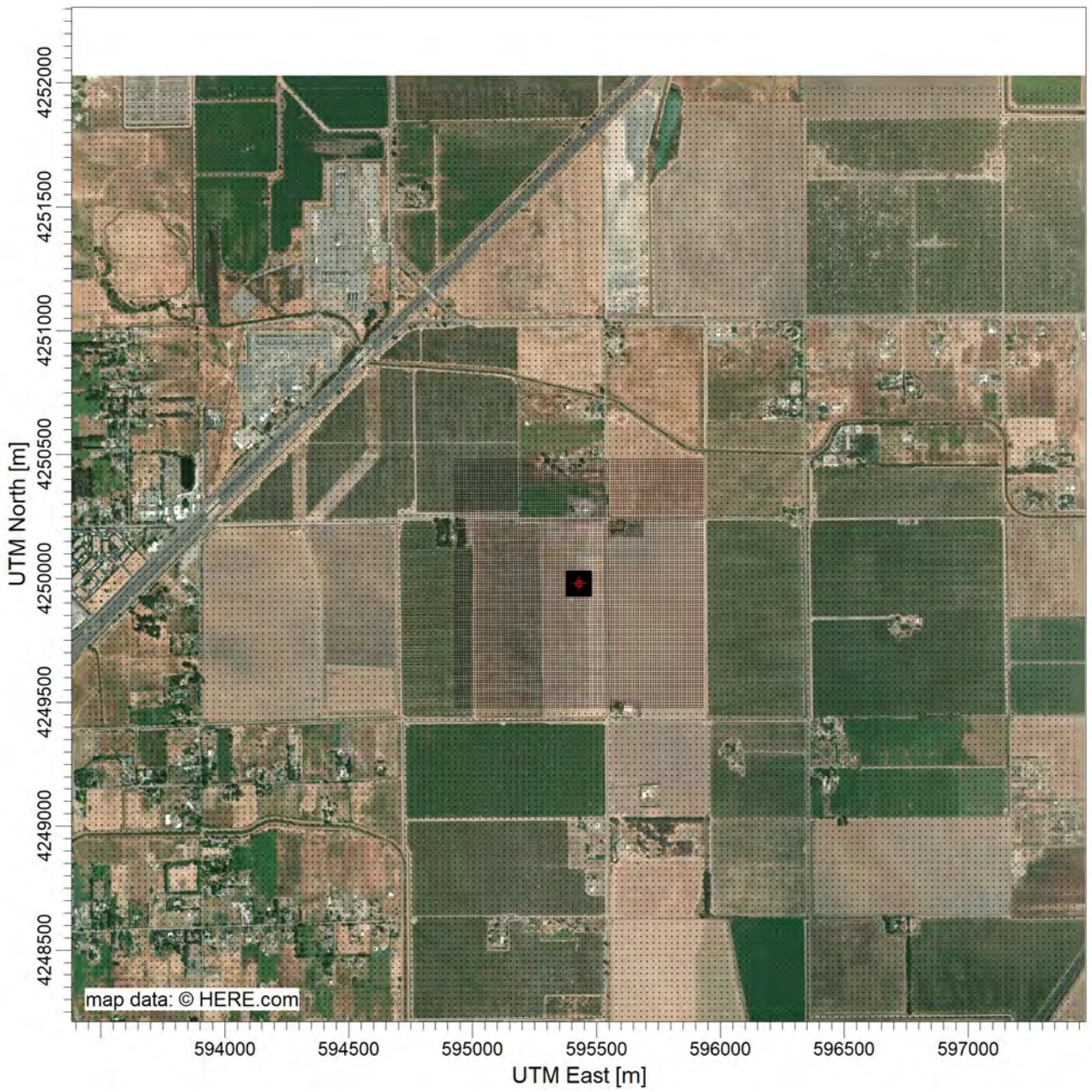
Non-Fire Case: NO2 Emissions Contours ..... Att 2 – 5

Fire Case: HF Emissions Contours ..... Att 2 – 6

Fire Case: Deposition Contours 6 hour..... Att 2 – 7

PROJECT TITLE:

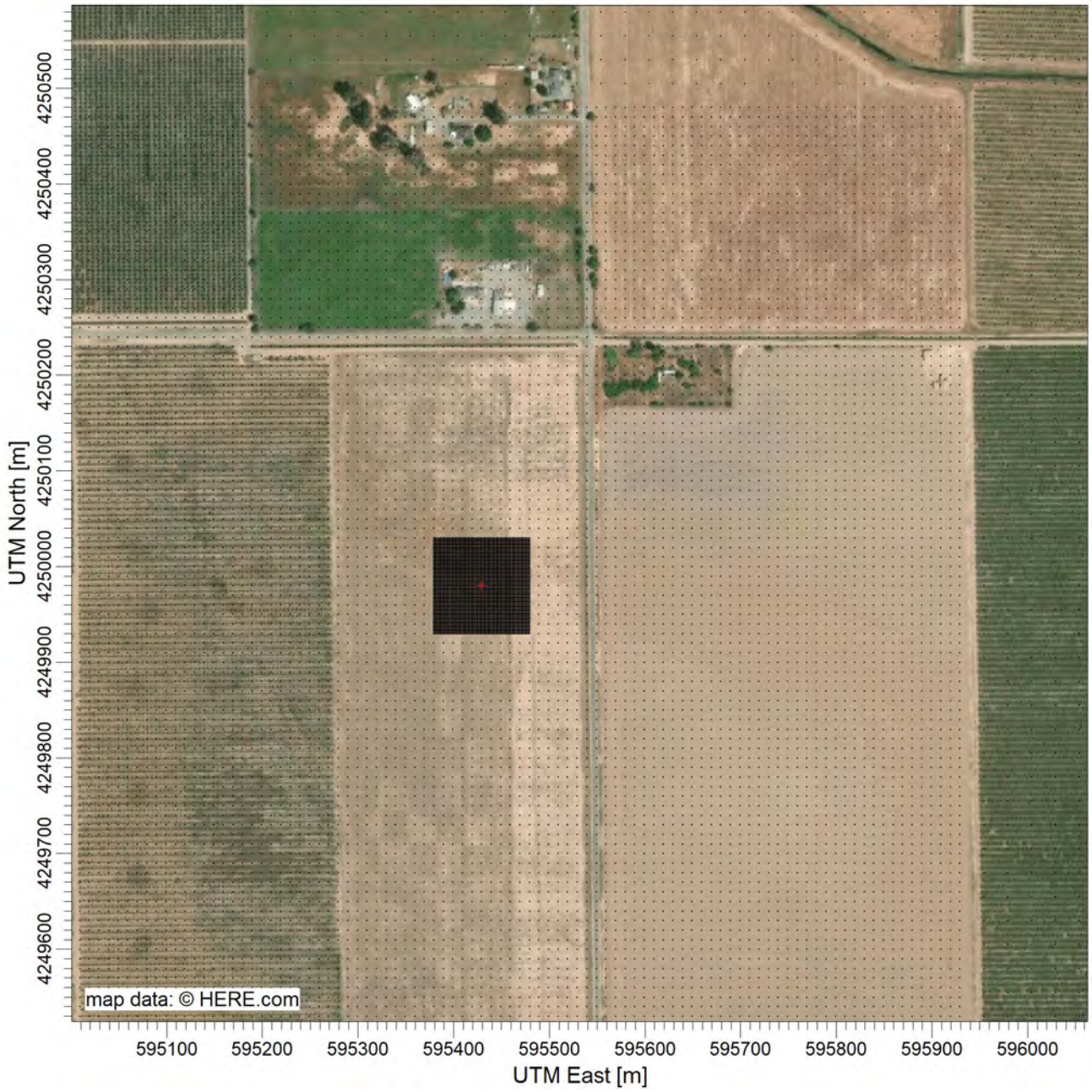
Corby Battery Project
AERMOD Receptor Grid



COMMENTS:	SOURCES: **1**	COMPANY NAME:	
	RECEPTORS: **44521**	MODELER:	
		SCALE: 1:25,753 0 1 km	
		DATE: **4/16/2026**	PROJECT NO.:

PROJECT TITLE:

Corby Battery Project
AERMOD Receptor Grid Near

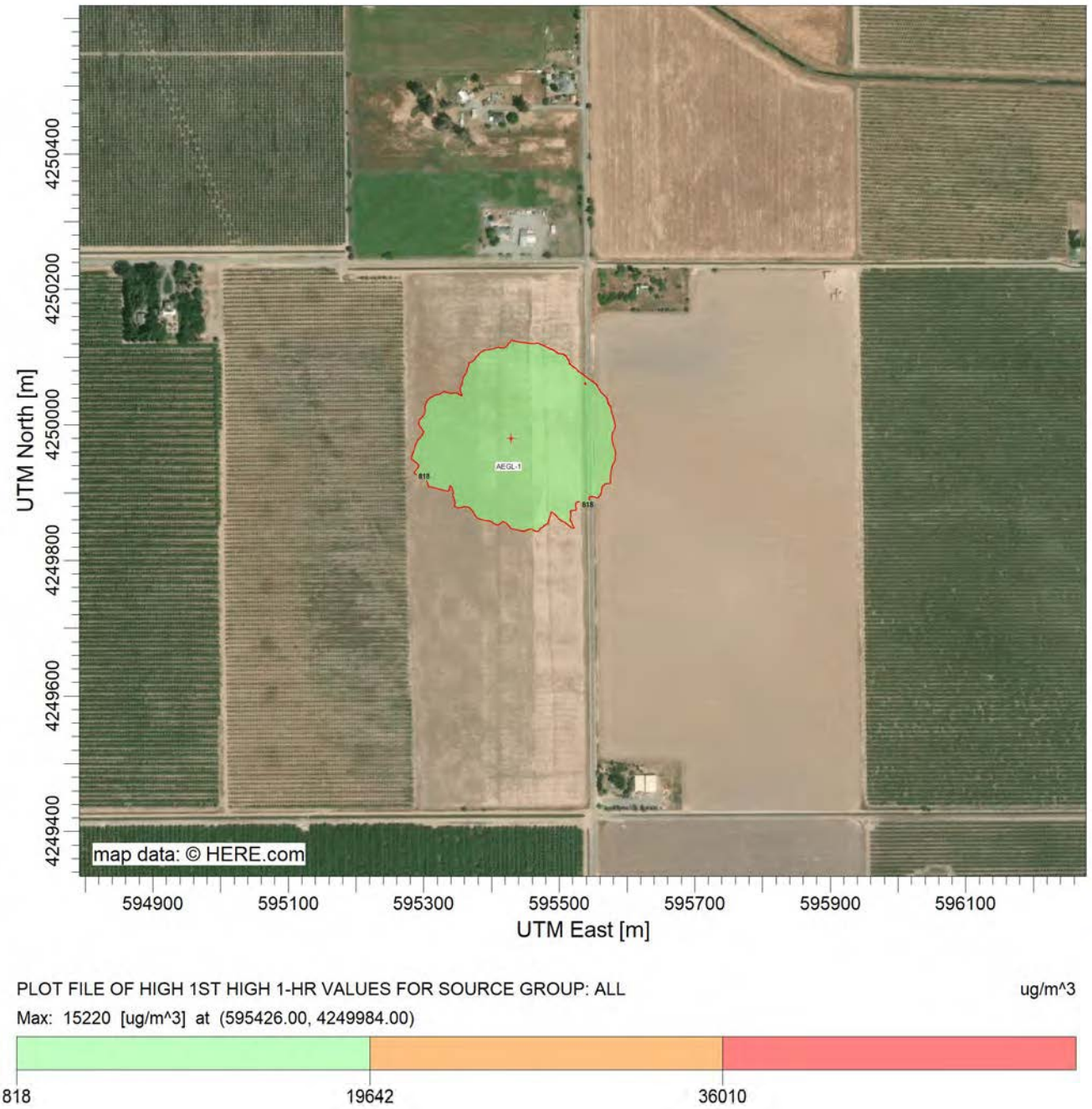


COMMENTS:	SOURCES: **1**	COMPANY NAME:	
	RECEPTORS: **44521**	MODELER:	
		SCALE: 1:6,681 0 0.2 km	
		DATE: **4/16/2026**	PROJECT NO.:

Receptor Locations

PROJECT TITLE:

Corby Battery Project
Acute Emissions Impacts Non-Fire Case



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 15220 [ug/m^3] at (595426.00, 4249984.00)

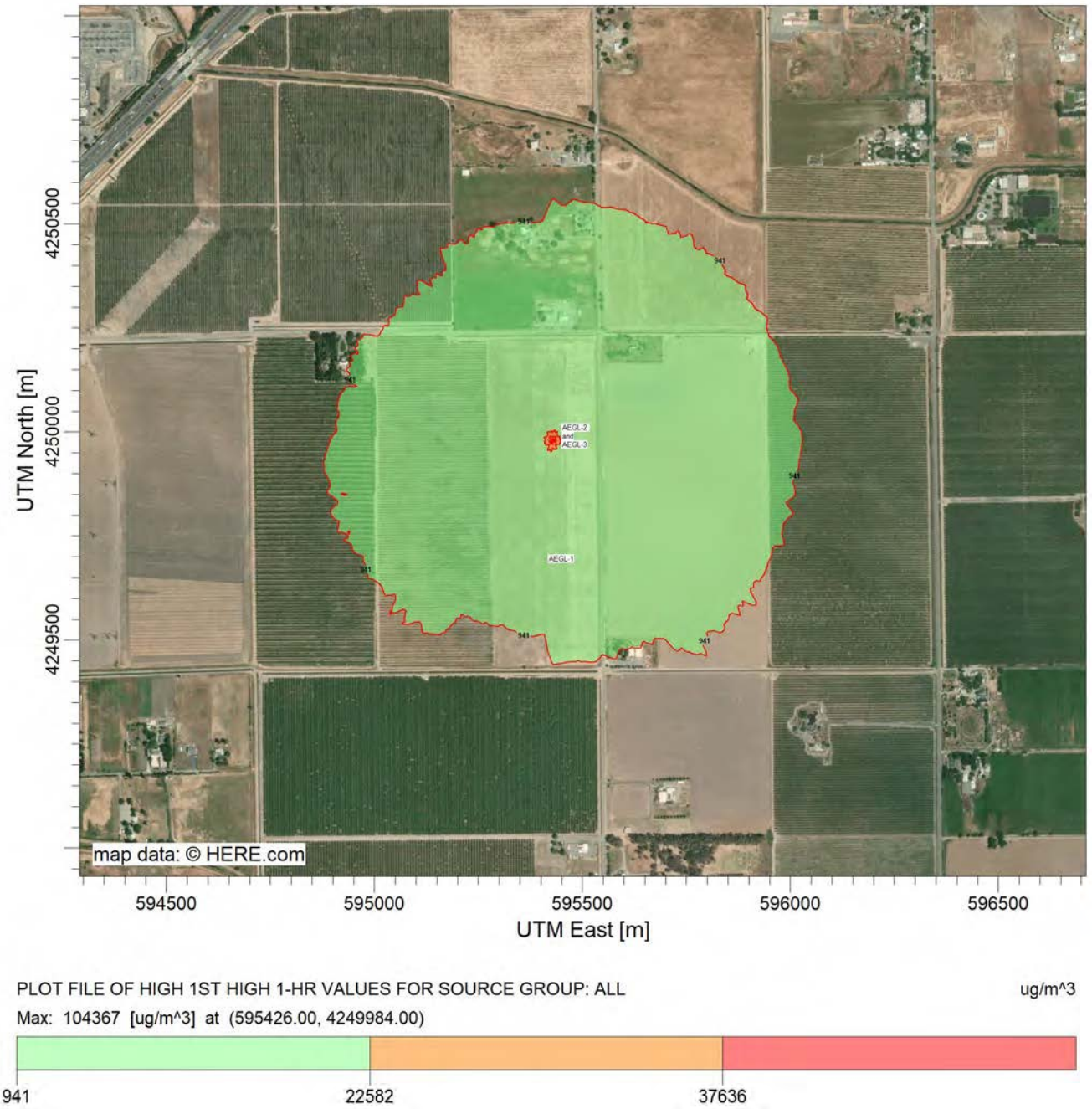
818 19642 36010

COMMENTS: HF Impacts AEGL-1: 818 ug/m3 AEGL-2: 19,642 ug/m3 AEGL-3: 36,010 ug/m3	SOURCES: **1**		
	RECEPTORS: **44521**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:9,347 0 0.3 km	
	MAX: **15220 ug/m^3**		PROJECT NO.:

AERMOD View - Lakes Environmental Software

PROJECT TITLE:

Corby Battery Project
Acute Emissions Impacts Non-Fire Case



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

Max: 104367 [ug/m^3] at (595426.00, 4249984.00)

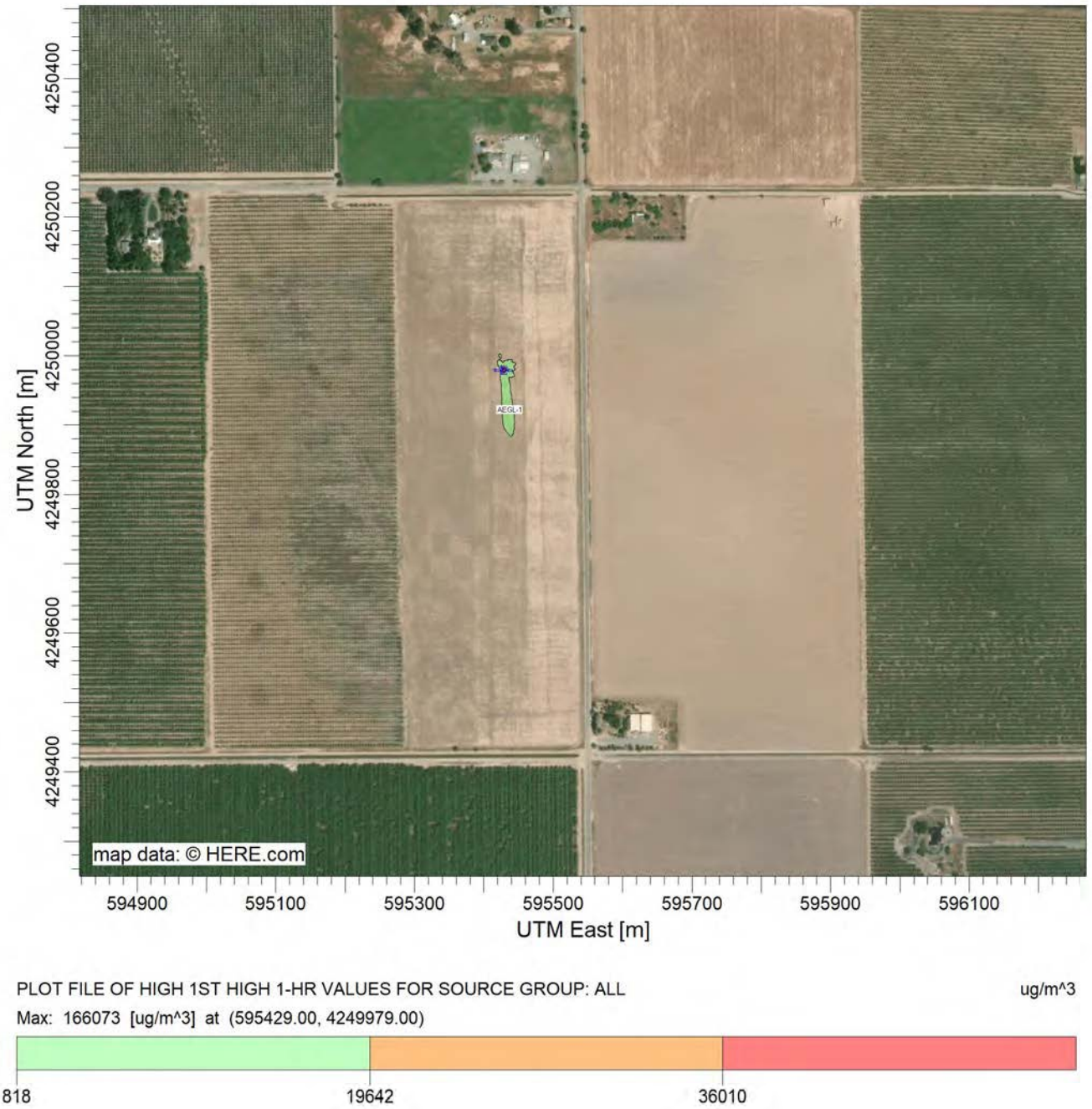
941 22582 37636

COMMENTS: NO2 Impacts AEGL-1: 941 ug/m3 AEGL-2: 22,582 ug/m3 AEGL-3: 37,636 ug/m3	SOURCES: **1**		
	RECEPTORS: **44521**		
	OUTPUT TYPE: **Concentration**	SCALE: 1:15,220 0 0.5 km	
	MAX: **104367 ug/m^3**		PROJECT NO.:

AERMOD View - Lakes Environmental Software

PROJECT TITLE:

Corby Battery Project
Acute Emissions Impacts Fire Case



PLOT FILE OF HIGH 1ST HIGH 1-HR VALUES FOR SOURCE GROUP: ALL ug/m^3

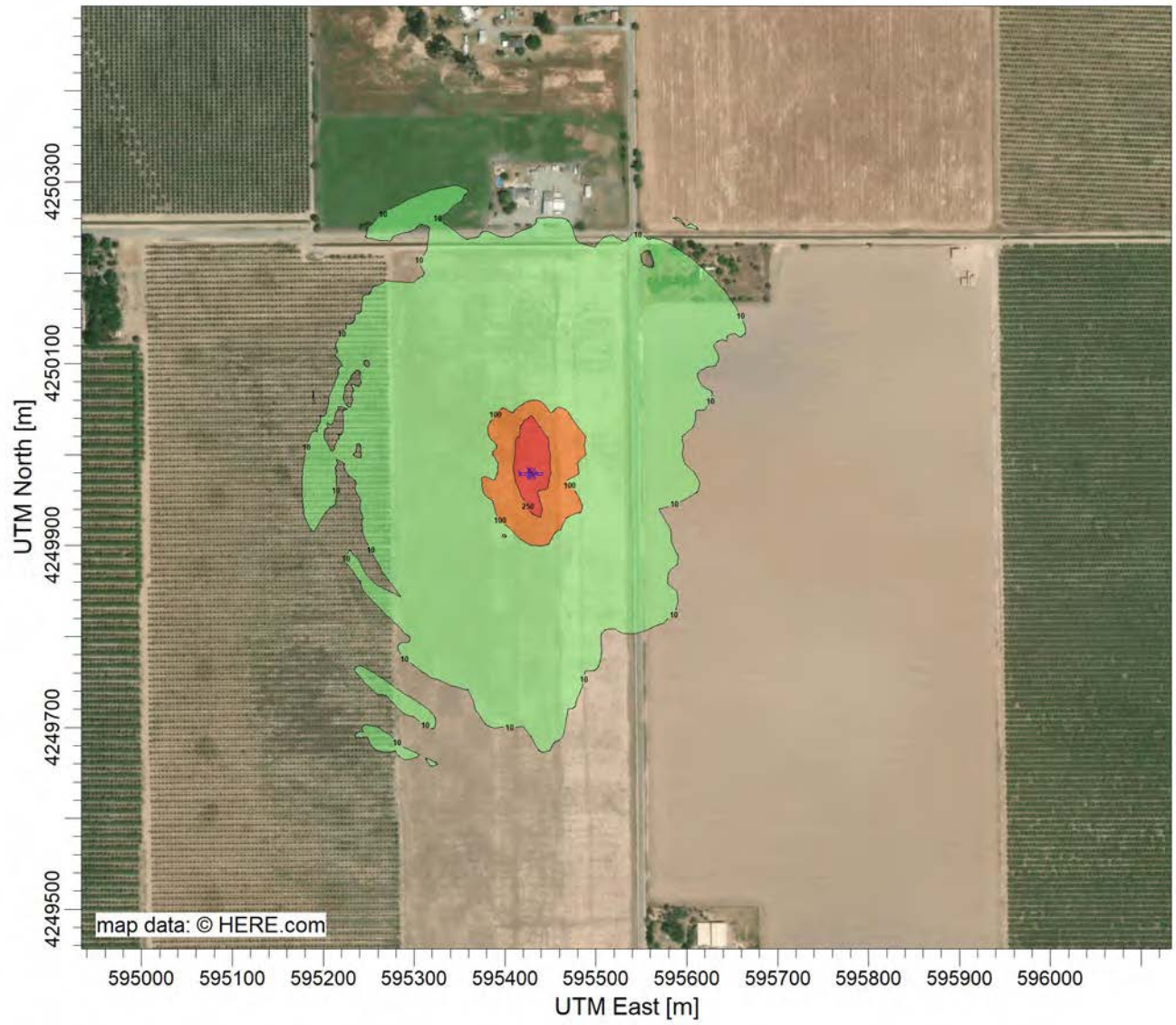
Max: 166073 [ug/m^3] at (595429.00, 4249979.00)

818 19642 36010

COMMENTS: HF Impacts AEGL-1: 818 ug/m3 AEGL-2: 19,642 ug/m3 AEGL-3: 36,010 ug/m3	SOURCES: **1**	COMPANY NAME:	
	RECEPTORS: **44521**	MODELER:	
	OUTPUT TYPE: **Concentration**	SCALE: 1:9,130 0 0.3 km	
	MAX: **166073 ug/m^3**	DATE: **5/5/2026**	PROJECT NO.:

PROJECT TITLE:

Corby Battery Project
Acute Emissions Impacts Fire Case Deposition



PLOT FILE OF HIGH 1ST HIGH 6-HR VALUES FOR SOURCE GROUP: 1 g/m^2

Max: 5583 [g/m^2] at (595429.00, 4250000.00)

10 100 250

COMMENTS: Particulate Deposition g/m2 6 hour Note that the modeling run is for a source located closest to the North receptor. For units that have a fire incident located close to the boundaries to the east, south or west, the results are shifted to center over those respective units.	SOURCES: **1**		
	RECEPTORS: **34441**		
	OUTPUT TYPE: **Dry Depos.**	SCALE: 1:7,542 0 0.2 km	
	MAX: **5583 g/m^2**		PROJECT NO.:

AERMOD View - Lakes Environmental Software

Attachment 3

Modeling Inputs

Attachment 3 Modeling Files

Table of Contents

Table **Page**

AERMOD Control Pathway ..... Att 3 – 1

AERMOD Source Pathway: Building Downwash ..... Att 3 – 2

AERMOD Receptor Pathway..... Att 3 – 4

AERMOD Meteorological Pathway..... Att 3 – 5

AERMOD Input File: Non-Fire Case..... Att 3 – 6

AERMOD Input File: Fire Case..... Att 3 – 8

CANARY Flammable Gas Modeling..... Att 3 - 10

Control Pathway

Dispersion Options

Titles

Corby Battery Project
Acute Emissions Impacts

Dispersion Options

☑ Regulatory Default ☐ Non-Default Options

Dispersion Coefficient

Rural

Output Type

☑ Concentration
☐ Total Deposition (Dry & Wet)
☐ Dry Deposition
☐ Wet Deposition

Plume Depletion

☐ Dry Removal
☐ Wet Removal

Output Warnings

☐ No Output Warnings
☐ Non-fatal Warnings for Non-sequential Met Data

Pollutant / Averaging Time / Terrain Options

Pollutant Type

OTHER - OTHER

Averaging Time Options

Hours ☑ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 6 ☐ 8 ☐ 12 ☐ 24

☐ Month ☐ Period ☐ Annual

Exponential Decay

Option not available

Terrain Height Options

☐ Flat ☑ Elevated

SO: Meters
RE: Meters
TG: Meters

Flagpole Receptors

☑ Yes ☐ No

Default Height = 1.80 m

Building Downwash Information

Source ID: 1

Heights [m] (10 to 360 deg)						
10-60 deg	2.90	2.90	2.90	2.90	2.90	2.90
70-120 deg	2.90	2.90	2.90	2.90	2.90	2.90
130-180 deg	2.90	2.90	2.90	2.90	2.90	2.90
190-240 deg	2.90	2.90	2.90	2.90	2.90	2.90
250-300 deg	2.90	2.90	2.90	2.90	2.90	2.90
310-360 deg	2.90	2.90	2.90	2.90	2.90	2.90
Widths [m] (10 to 360 deg)						
10-60 deg	7.51	7.62	7.49	7.12	6.54	5.81
70-120 deg	4.87	3.78	7.10	3.78	4.87	5.81
130-180 deg	6.54	7.12	7.49	7.62	7.51	7.17
190-240 deg	7.51	7.62	7.49	7.12	6.54	5.81
250-300 deg	4.87	3.78	7.10	3.78	4.87	5.81
310-360 deg	6.54	7.12	7.49	7.62	7.51	7.17
Lengths [m] (10 to 360 deg)						
10-60 deg	3.78	4.87	5.77	6.54	7.12	7.49
70-120 deg	7.62	7.51	7.20	7.51	7.62	7.49
130-180 deg	7.12	6.54	5.77	4.87	3.78	2.57
190-240 deg	3.78	4.87	5.77	6.54	7.12	7.49
250-300 deg	7.62	7.51	7.20	7.51	7.62	7.49
310-360 deg	7.12	6.54	5.77	4.87	3.78	2.57
Along Flow [m] (10 to 360 deg)						
10-60 deg	-3.15	-3.64	-7.95	-7.75	-7.32	-4.39
70-120 deg	-4.25	-3.98	-3.60	-3.53	-3.37	-3.10
130-180 deg	0.20	1.21	2.18	-1.23	-0.62	0.00
190-240 deg	-0.62	-1.23	2.18	1.21	0.20	-3.10
250-300 deg	-3.37	-3.53	-3.60	-3.98	-4.25	-4.39
310-360 deg	-7.32	-7.75	-7.95	-3.64	-3.15	-2.57
Across Flow [m] (10 to 360 deg)						
10-60 deg	-0.22	-0.44	-2.92	-3.76	-4.48	-1.11
70-120 deg	-1.21	-1.27	-3.55	-1.27	-1.21	-1.11
130-180 deg	-4.48	-3.76	-2.92	-0.44	-0.22	0.00
190-240 deg	0.22	0.44	2.93	3.76	4.48	1.11
250-300 deg	1.21	1.27	3.55	1.27	1.21	1.11
310-360 deg	4.48	3.76	2.92	0.44	0.22	0.00

Source Pathway

Emission Rate Units for Output

For Concentration

Unit Factor:	1E6
Emission Unit Label:	GRAMS/SEC
Concentration Unit Label:	MICROGRAMS/M**3

Source Groups

Source Group ID: 1	List of Sources in Group (Source Range or Single Sources)
	1

Receptor Pathway

Receptor Networks

Note: Terrain Elavations and Flagpole Heights for Network Grids are in Page RE2 - 1 (If applicable)
Generated Discrete Receptors for Multi-Tier (Risk) Grid and Receptor Locations for Fenceline Grid are in Page RE3 - 1 (If applicable)

Discrete Receptors

Plant Boundary Receptors

Multi-Tier Grid (Risk)

Grid Settings

Grid Origin:	595429.00	4249980.00
Number of Tiered Segments:	3	

Segment Number	Distance from Center (Origin) [m]	Spacing [m]
1	50.00	1.00
2	500.00	10.00
3	2000.00	25.00

Receptor Groups

Record Number	Group ID	Group Description
1	RISK	Receptors generated from Risk Grid
2	FENCEPRI	Cartesian plant boundary Primary Receptors

Meteorology Pathway

Met Input Data

Surface Met Data

Filename: 724828_2017-2021_ADJU.SFC
Format Type: Default AERMET format

Profile Met Data

Filename: 724828_2017-2021_ADJU.PFL
Format Type: Default AERMET format

Wind Speed

☐ Wind Speeds are Vector Mean (Not Scalar Means)

Wind Direction

Rotation Adjustment [deg]:

Potential Temperature Profile

Base Elevation above MSL (for Primary Met Tower): 36.00 [m]

Meteorological Station Data

Stations	Station No.	Year	X Coordinate [m]	Y Coordinate [m]	Station Name
Surface		2017			AIRPORT
Upper Air		2017			
On-Site		2017			

Data Period

Data Period to Process

Start Date: 1/1/2017 Start Hour: 1 End Date: 12/31/2021 End Hour: 24

Wind Speed Categories

Stability Category	Wind Speed [m/s]	Stability Category	Wind Speed [m/s]
A	1.54	D	8.23
B	3.09	E	10.8
C	5.14	F	No Upper Bound

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 13.0.0
** Lakes Environmental Software Inc.
** Date: 4/27/2026
** File: C:\Users\gregc\OneDrive - MRS\Lakes\_CorbyBattery\CorbyBattery\CorbyBattery.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE Corby Battery Project
   TITLETWO Acute Emissions Impacts
   MODELOPT DFAULT CONC
   AVERTIME 1
   POLLUTID OTHER
   FLAGPOLE 1.80
   RUNORNOT RUN
   ERRORFIL CorbyBattery.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION 1            POINT      595429.000  4249980.000       22.860
** Source Parameters **
   SRCPARAM 1                  1.0     2.900   323.150 0.00373217770891118  1.545336

** Building Downwash **
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90

   BUILDWID 1               7.51     7.62     7.49     7.12     6.54     5.81
   BUILDWID 1               4.87     3.78     7.10     3.78     4.87     5.81
   BUILDWID 1               6.54     7.12     7.49     7.62     7.51     7.17
   BUILDWID 1               7.51     7.62     7.49     7.12     6.54     5.81
   BUILDWID 1               4.87     3.78     7.10     3.78     4.87     5.81
   BUILDWID 1               6.54     7.12     7.49     7.62     7.51     7.17

   BUILDLEN 1               3.78     4.87     5.77     6.54     7.12     7.49
   BUILDLEN 1               7.62     7.51     7.20     7.51     7.62     7.49
   BUILDLEN 1               7.12     6.54     5.77     4.87     3.78     2.57
   BUILDLEN 1               3.78     4.87     5.77     6.54     7.12     7.49
   BUILDLEN 1               7.62     7.51     7.20     7.51     7.62     7.49
   BUILDLEN 1               7.12     6.54     5.77     4.87     3.78     2.57

   XBADJ    1              -3.15    -3.64    -7.95    -7.75    -7.32    -4.39
   XBADJ    1              -4.25    -3.98    -3.60    -3.53    -3.37    -3.10
   XBADJ    1               0.20     1.21     2.18    -1.23    -0.62     0.00
   XBADJ    1              -0.62    -1.23     2.18     1.21     0.20    -3.10
   XBADJ    1              -3.37    -3.53    -3.60    -3.98    -4.25    -4.39
   XBADJ    1              -7.32    -7.75    -7.95    -3.64    -3.15    -2.57

   YBADJ    1              -0.22    -0.44    -2.92    -3.76    -4.48    -1.11
   YBADJ    1              -1.21    -1.27    -3.55    -1.27    -1.21    -1.11
   YBADJ    1              -4.48    -3.76    -2.92    -0.44    -0.22     0.00
   YBADJ    1               0.22     0.44     2.93     3.76     4.48     1.11
   YBADJ    1               1.21     1.27     3.55     1.27     1.21     1.11
   YBADJ    1               4.48     3.76     2.92     0.44     0.22     0.00

   SRCGROUP 1        1
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
```

```
**
**
RE STARTING
   INCLUDED CorbyBattery.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
** Surface File Path: C:\Users\gregc\OneDrive - MRS\Lakes\_CorbyBattery\CorbyBattery\
   SURFFILE 724828_2017-2021_ADJU.SFC
** Profile File Path: C:\Users\gregc\OneDrive - MRS\Lakes\_CorbyBattery\CorbyBattery\
   PROFFILE 724828_2017-2021_ADJU.PFL
   SURFDATA 93241 2017 AIRPORT
   UAIRDATA 23230 2017
   SITEDATA 0 2017
   PROFBASE 36.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   PLOTFILE 1 1 1ST "C:\Users\gregc\OneDrive - MRS\Lakes\_CorbyBattery\CorbyBattery\CORBYBATTERY.AD\MAX1HR1.PLT" 31
OU FINISHED
**
**************************************
** Project Parameters
**************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     10
** ZONEINX  0
**
```

```
**
**************************************
**
** AERMOD Input Produced by:
** AERMOD View Ver. 13.0.0
** Lakes Environmental Software Inc.
** Date: 4/27/2026
** File: C:\Users\gregc\OneDrive - MRS\Lakes\_CorbyBatteryFire\CorbyBatteryFireLowTemp\CorbyBatteryFireLowTemp.ADI
**
**************************************
**
**
**************************************
** AERMOD Control Pathway
**************************************
**
**
CO STARTING
   TITLEONE Corby Battery Project
   TITLETWO Acute Emissions Impacts Fire Case
   MODELOPT DFAULT CONC
   AVERTIME 1
   POLLUTID OTHER
   FLAGPOLE 1.80
   RUNORNOT RUN
   ERRORFIL CorbyBatteryFireLowTemp.err
CO FINISHED
**
**************************************
** AERMOD Source Pathway
**************************************
**
**
SO STARTING
** Source Location **
** Source ID - Type - X Coord. - Y Coord. **
   LOCATION 1            POINT      595429.000  4249980.000       22.860
** Source Parameters **
   SRCPARAM 1                  1.0     2.900   499.000       8.5       4.8

** Building Downwash **
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90
   BUILDHGT 1               2.90     2.90     2.90     2.90     2.90     2.90

   BUILDWID 1               7.51     7.62     7.49     7.12     6.54     5.81
   BUILDWID 1               4.87     3.78     7.10     3.78     4.87     5.81
   BUILDWID 1               6.54     7.12     7.49     7.62     7.51     7.17
   BUILDWID 1               7.51     7.62     7.49     7.12     6.54     5.81
   BUILDWID 1               4.87     3.78     7.10     3.78     4.87     5.81
   BUILDWID 1               6.54     7.12     7.49     7.62     7.51     7.17

   BUILDLEN 1               3.78     4.87     5.77     6.54     7.12     7.49
   BUILDLEN 1               7.62     7.51     7.20     7.51     7.62     7.49
   BUILDLEN 1               7.12     6.54     5.77     4.87     3.78     2.57
   BUILDLEN 1               3.78     4.87     5.77     6.54     7.12     7.49
   BUILDLEN 1               7.62     7.51     7.20     7.51     7.62     7.49
   BUILDLEN 1               7.12     6.54     5.77     4.87     3.78     2.57

   XBADJ    1              -3.15    -3.64    -7.95    -7.75    -7.32    -4.39
   XBADJ    1              -4.25    -3.98    -3.60    -3.53    -3.37    -3.10
   XBADJ    1               0.20     1.21     2.18    -1.23    -0.62     0.00
   XBADJ    1              -0.62    -1.23     2.18     1.21     0.20    -3.10
   XBADJ    1              -3.37    -3.53    -3.60    -3.98    -4.25    -4.39
   XBADJ    1              -7.32    -7.75    -7.95    -3.64    -3.15    -2.57

   YBADJ    1              -0.22    -0.44    -2.92    -3.76    -4.48    -1.11
   YBADJ    1              -1.21    -1.27    -3.55    -1.27    -1.21    -1.11
   YBADJ    1              -4.48    -3.76    -2.92    -0.44    -0.22     0.00
   YBADJ    1               0.22     0.44     2.93     3.76     4.48     1.11
   YBADJ    1               1.21     1.27     3.55     1.27     1.21     1.11
   YBADJ    1               4.48     3.76     2.92     0.44     0.22     0.00

   SRCGROUP 1        1
SO FINISHED
**
**************************************
** AERMOD Receptor Pathway
**************************************
```

```
**
**
RE STARTING
   INCLUDED CorbyBatteryFireLowTemp.rou
RE FINISHED
**
**************************************
** AERMOD Meteorology Pathway
**************************************
**
**
ME STARTING
** Surface File Path: C:\Users\gregc\OneDrive - MRS\Lakes\_CorbyBatteryFire\CorbyBatteryFireLowTemp\
   SURFFILE 724828_2017-2021_ADJU.SFC
** Profile File Path: C:\Users\gregc\OneDrive - MRS\Lakes\_CorbyBatteryFire\CorbyBatteryFireLowTemp\
   PROFFILE 724828_2017-2021_ADJU.PFL
   SURFDATA 93241 2017 AIRPORT
   UAIRDATA 23230 2017
   SITEDATA 0 2017
   PROFBASE 36.0 METERS
ME FINISHED
**
**************************************
** AERMOD Output Pathway
**************************************
**
**
OU STARTING
   RECTABLE ALLAVE 1ST
   RECTABLE 1 1ST
   PLOTFILE 1 1 1ST "C:\Users\gregc\OneDrive -
MRS\Lakes\_CorbyBatteryFire\CorbyBatteryFireLowTemp\CORBYBATTERYFIRELOWTEMP.AD\MAX1HR1.PLT" 31
OU FINISHED
**
**************************************
** Project Parameters
**************************************
** PROJCTN  CoordinateSystemUTM
** DESCPTN  UTM: Universal Transverse Mercator
** DATUM    World Geodetic System 1984
** DTMRGN   Global Definition
** UNITS    m
** ZONE     10
** ZONEINX  0
**
```

Case Inputs

```
Case Type           : Vapor Dispersion
Case Name           : LG_JF2-Flamm
User ID             : GC
Project Number      :
Type of Units       : English Units

  NOTES: CEC Analysis Flammable Only

MATERIAL MENU
Materials Released  : Number  Formula   Name                        Fraction
Component  1        :    51 = H2        Hydrogen                    0.593000
Component  2        :    43 = CO        Carbon Monoxide             0.100000
Component  3        :     1 = CH4       Methane                     0.036800
Component  4        :     2 = C2H6      Ethane                      0.032200
Component  5        :     3 = C3H8      Propane                     0.003800
Component  6        :     4 = C4H10     Isobutane                   0.004000
Component  7        :     6 = C5H12     Isopentane                  0.006200
Component  8        :    17 = CO2       Carbon Dioxide              0.224000
Component  9        :
Component 10        :

Temperature         :        81.00 °F
Pressure            :        15.00 psia
The material is Indeterminate


  NOTES:

ENVIRONMENT MENU
Wind speed                                    3.36 mph
Wind speed measurement height                 32.8 feet
Stability class <A-F>                            F
Relative humidity                               70 %
Air temperature                               77.0 °F
Spill surface temperature                     77.0 °F

Substrate name                          Soil
  Substrate thermal conductivity            1.0000 Btu/hr-ft-F
  Substrate density                            100 lb/cu.ft
  Substrate heat Capacity                     0.24 Btu/lb-F
  Substrate delay time                          60 sec
Surrounding terrain                     Long grass or crops > 15 cm (6 in)

  NOTES:
```

RELEASE MENU

Type of release:	Regulated	
Release duration	60	min
Regulated flow rate	0.01	lb/sec
Pipe inner diameter	22.63	inches
Equivalent release diameter	19.20	inches
Height of release point	9.5	feet
Angle of release from horizontal	90.0	degrees

NOTES:

IMPOUNDMENT MENU

Unconfined

NOTES:

VDVE MENU

Vapor dispersion - Flammable endpoints

Concentration endpoint 1	LFL	mol%
Concentration endpoint 2	1/2 LFL	mol%
Concentration endpoint 3	1/2 LFL	mol%
Dispersion coefficient averaging time	1.0	min

Baker-Strehlow-Tang parameters

Fuel reactivity	High
Obstacle density	High
Flame expansion	3-D

Overpressure endpoints

Overpressure endpoint 1	3.00	psi
Overpressure endpoint 2	1.00	psi
Overpressure endpoint 3	1.00	psi

NOTES:

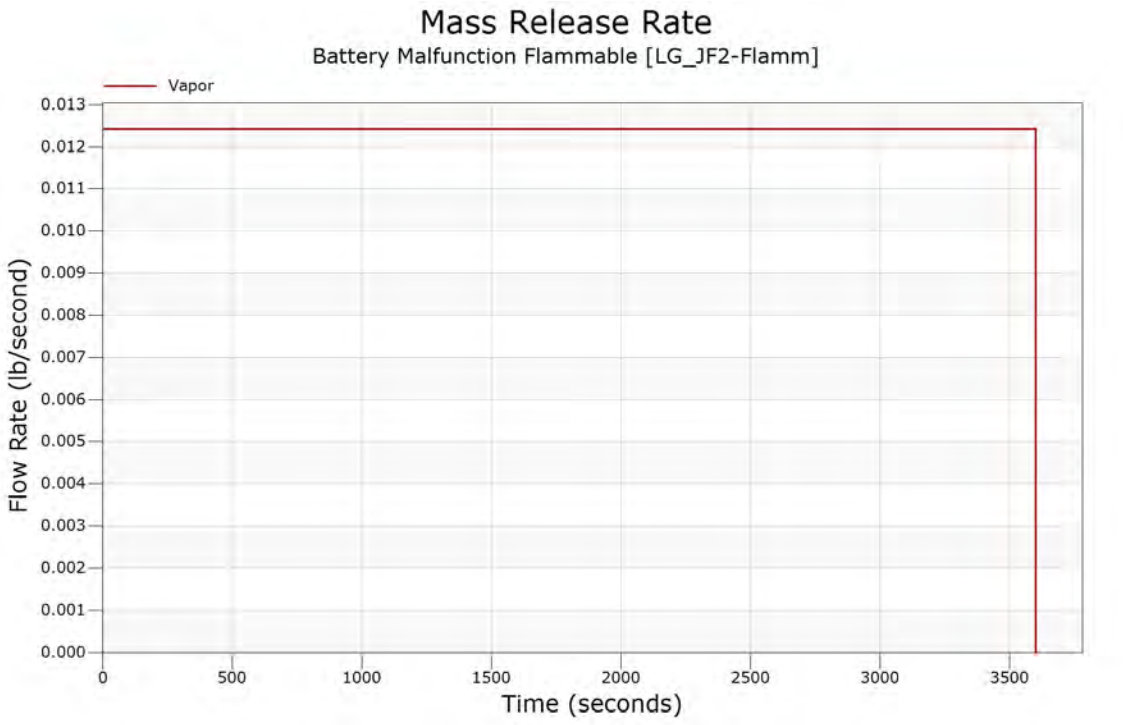
Release Model

WARNING USER ASSUMES RESPONSIBLIITY FOR INPUT CONSISTENCY IN REGULATED RELEASE CASE

Time (sec)	Vapor (lb/sec)	Aerosol Rate (lb/sec)	Liquid Rate (lb/sec)	Total Rate (lb/sec)
0.000000	1.243000E-02	0.000000	0.000000	1.243000E-02
0.100000	1.243000E-02	0.000000	0.000000	1.243000E-02
0.300000	1.243000E-02	0.000000	0.000000	1.243000E-02
0.500000	1.243000E-02	0.000000	0.000000	1.243000E-02
0.700000	1.243000E-02	0.000000	0.000000	1.243000E-02
1.000000	1.243000E-02	0.000000	0.000000	1.243000E-02
3.000000	1.243000E-02	0.000000	0.000000	1.243000E-02
5.000000	1.243000E-02	0.000000	0.000000	1.243000E-02
7.000000	1.243000E-02	0.000000	0.000000	1.243000E-02
10.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
20.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
30.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
40.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
50.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
60.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
70.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
85.00000	1.243000E-02	0.000000	0.000000	1.243000E-02
100.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
200.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
300.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
400.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
500.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
600.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
700.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
850.0000	1.243000E-02	0.000000	0.000000	1.243000E-02
1000.000	1.243000E-02	0.000000	0.000000	1.243000E-02
2000.000	1.243000E-02	0.000000	0.000000	1.243000E-02
3000.000	1.243000E-02	0.000000	0.000000	1.243000E-02
3600.000	1.243000E-02	0.000000	0.000000	1.243000E-02
Totals (lb)	44.74800	0.000000	0.000000	44.74800

Flowrate for Jet Fire [1st minute] = 0.1243000E-01 lb/sec.
Jet Fire [2-3 minutes] = 0.1243000E-01 lb/sec.

Reason for Ending: Reached Stop Time


Mass Release Rate
Battery Malfunction Flammable [LG_JF2-Flamm]
Vapor
Flow Rate (lb/second)
0.013
0.012
0.011
0.010
0.009
0.008
0.007
0.006
0.005
0.004
0.003
0.002
0.001
0.000
0
500
1000
1500
2000
2500
3000
3500
Time (seconds)

Release Compositions

Component Number	Component Name, Formula
51	Hydrogen, H2
43	Carbon Monoxide, CO
1	Methane, CH4
2	Ethane, C2H6
3	Propane, C3H8
4	Isobutane, C4H10
6	Isopentane, C5H12
17	Carbon Dioxide, CO2

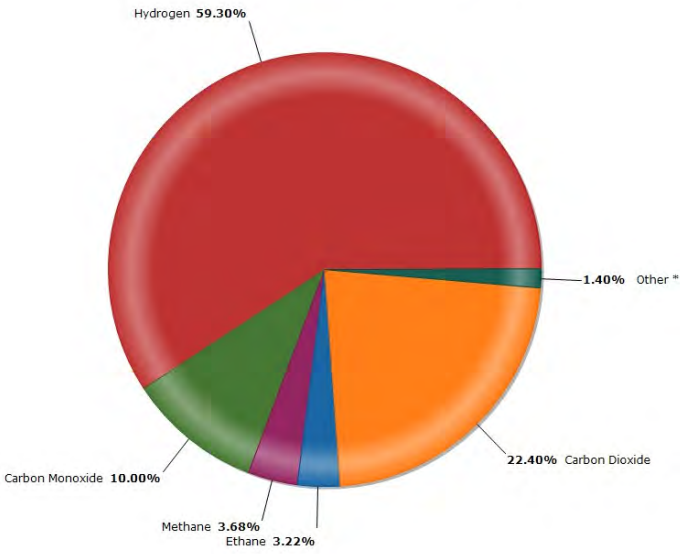
Composition (Mole Fraction) of Fluid Streams

Comp. No.	Feed Stream	Momentum Jet Stream				Liquid Pool Stream
		Flashed Vapor	Evaporated Vapor	Aerosol Liquid	Total Stream	Liquid to Ground
51	0.593000	0.593000	0.000000	0.000000	0.593000	0.000000
43	0.100000	0.100000	0.000000	0.000000	0.100000	0.000000
1	0.036800	0.036800	0.000000	0.000000	0.036800	0.000000
2	0.032200	0.032200	0.000000	0.000000	0.032200	0.000000
3	0.003800	0.003800	0.000000	0.000000	0.003800	0.000000
4	0.004000	0.004000	0.000000	0.000000	0.004000	0.000000
6	0.006200	0.006200	0.000000	0.000000	0.006200	0.000000
17	0.224000	0.224000	0.000000	0.000000	0.224000	0.000000
	1.000000	1.000000	0.000000	0.000000	1.000000	0.000000

Flammable Limits (Mole %) of Fluid Streams

Limit	Feed Stream	Momentum Jet Stream	Liquid Pool Stream
LFL	5.47	5.47	
UFL	49.83	49.83	
LBV		0.75 m/s	

Momentum Jet Stream
Battery Malfunction Flammable [LG_JF2-Flamm]



* Other, Propane 0.38%, Isobutane 0.40%, Isopentane 0.62%

Momentum Jet Dispersion

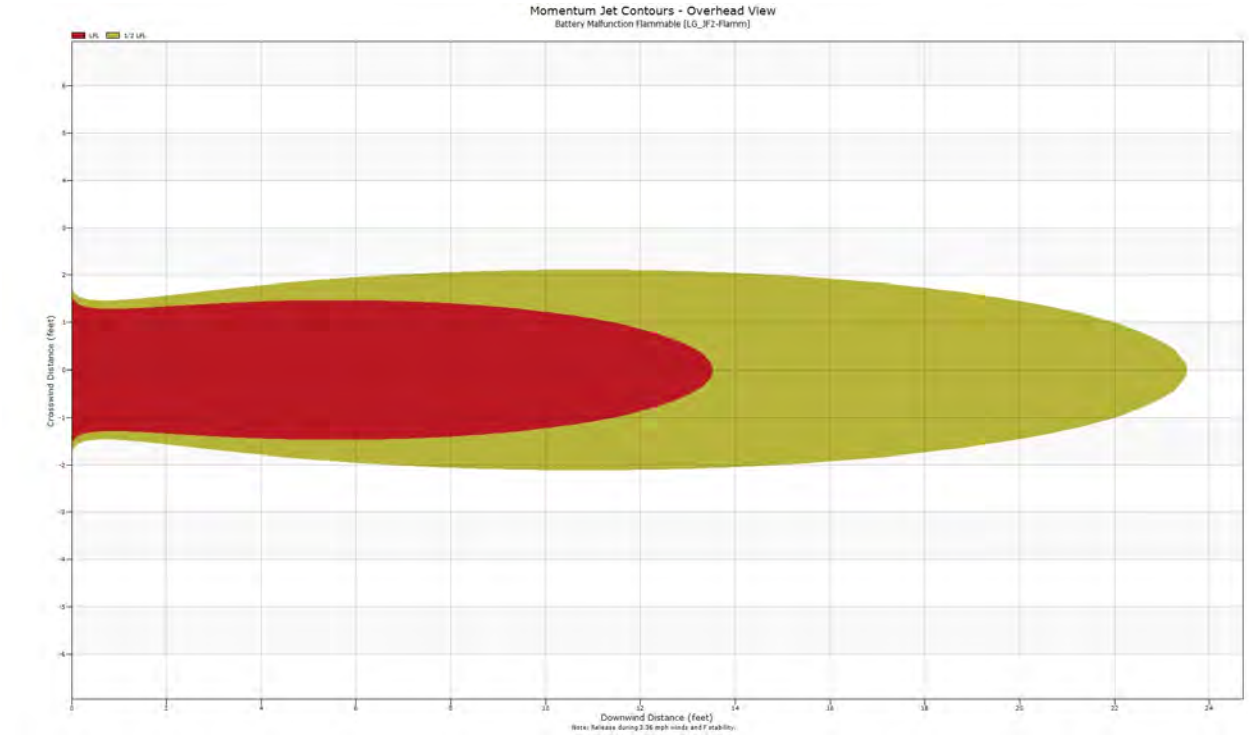
concentration limits

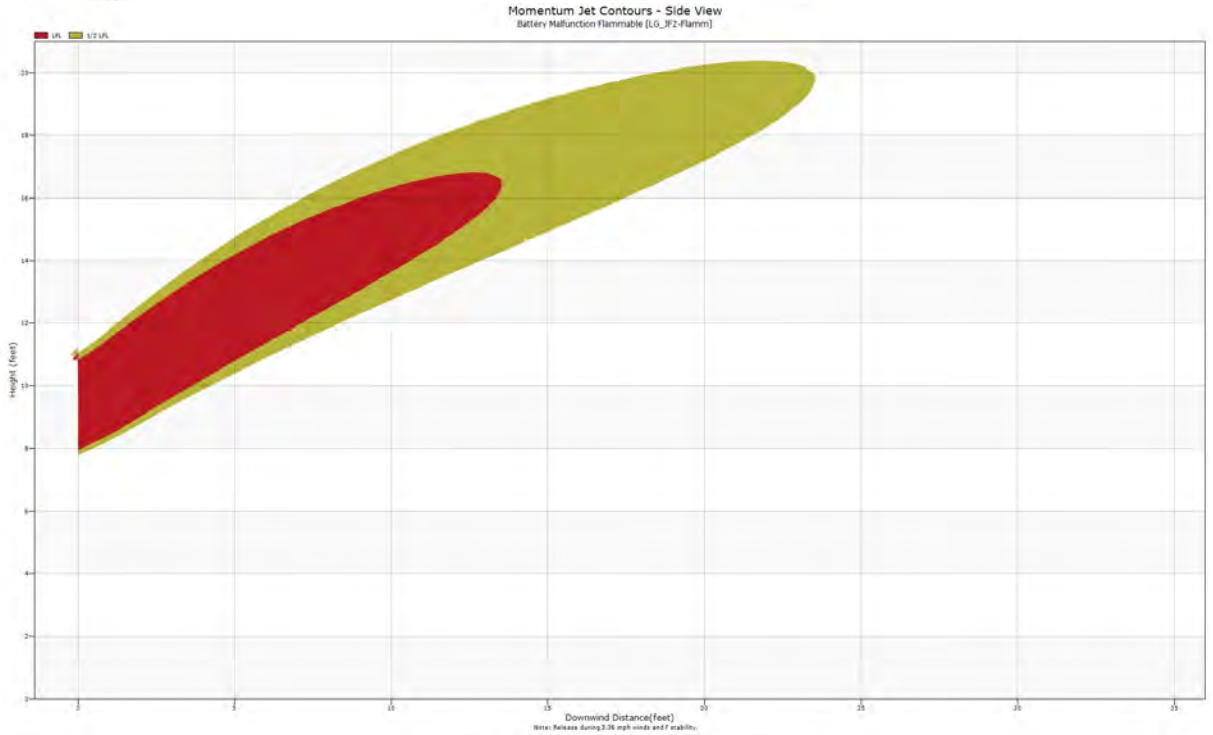
Endpoint 1 (highest) = 0.054704 mole fraction
Endpoint 2 (middle) = 0.027352 mole fraction
Endpoint 3 (lowest) = 0.027352 mole fraction

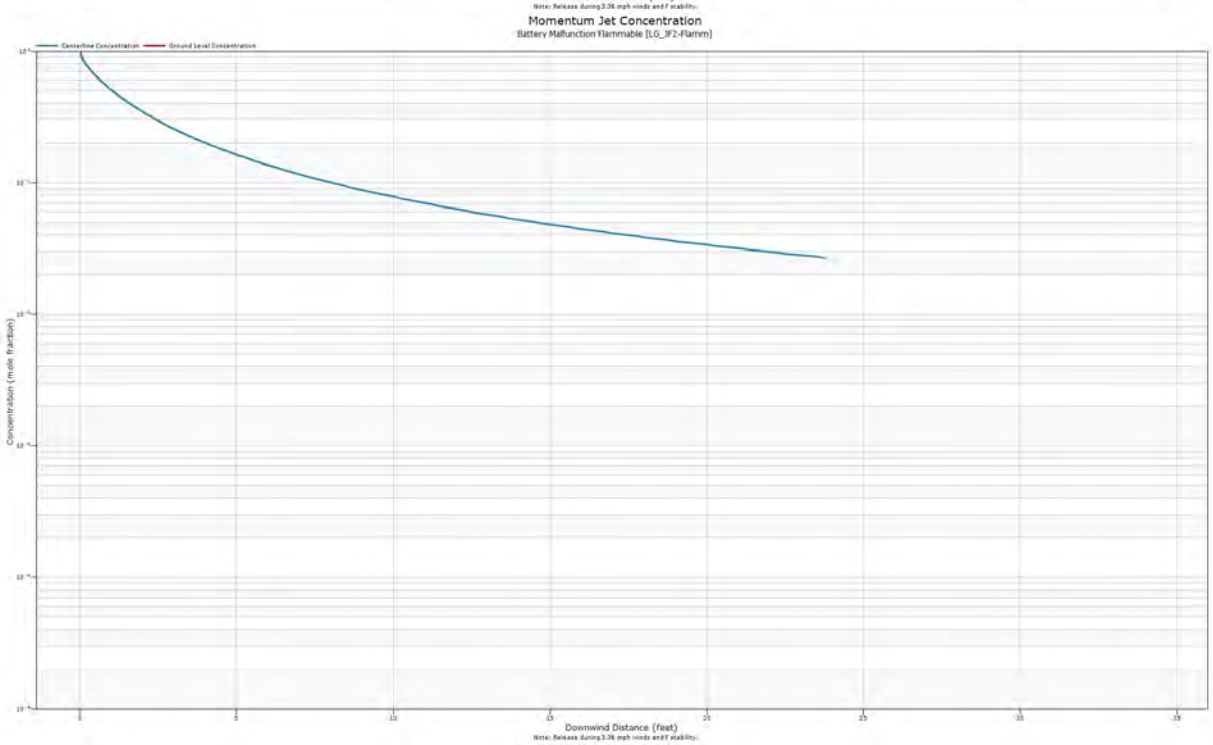
downwind distance (ft)	centerline conc. (mole frac.)	ground conc. (mole frac.)	Endpoint3 1/2 width (ft)	Endpoint2 1/2 width (ft)	Endpoint1 1/2 width (ft)	centerline height (ft)
0	1.000000	0.000000	1.7	1.7	1.5	9.5
0.5	0.651886	0.000000	1.5	1.5	1.3	9.6
1.0	0.508063	0.000000	1.5	1.5	1.3	9.9
1.5	0.413038	0.000000	1.5	1.5	1.3	10.3
2.0	0.345648	0.000000	1.6	1.6	1.3	10.6
2.5	0.295213	0.000000	1.6	1.6	1.4	10.9
3.0	0.256297	0.000000	1.7	1.7	1.4	11.3
3.5	0.225521	0.000000	1.7	1.7	1.4	11.6
4.0	0.200677	0.000000	1.8	1.8	1.4	11.9
4.5	0.180139	0.000000	1.8	1.8	1.5	12.2
5.0	0.162998	0.000000	1.9	1.9	1.5	12.5
5.5	0.148359	0.000000	1.9	1.9	1.5	12.8
6.0	0.135889	0.000000	2.0	2.0	1.5	13.1
6.5	0.125071	0.000000	2.0	2.0	1.5	13.3
7.0	0.115738	0.000000	2.0	2.0	1.5	13.6
7.5	0.107489	0.000000	2.0	2.0	1.4	13.9
8.0	0.100195	0.000000	2.1	2.1	1.4	14.1
8.5	0.093736	0.000000	2.1	2.1	1.4	14.4
9.0	0.087914	0.000000	2.1	2.1	1.3	14.6
9.5	0.082689	0.000000	2.1	2.1	1.3	14.8
10.0	0.078000	0.000000	2.1	2.1	1.2	15.1
10.5	0.073721	0.000000	2.1	2.1	1.2	15.3
11.0	0.069855	0.000000	2.1	2.1	1.1	15.5
11.5	0.066319	0.000000	2.1	2.1	1.0	15.7
12.0	0.063066	0.000000	2.1	2.1	0.9	15.9
12.5	0.060084	0.000000	2.1	2.1	0.7	16.1
13.0	0.057340	0.000000	2.1	2.1	0.5	16.3
13.5	0.054789	0.000000	2.1	2.1	0.1	16.5
14.0	0.052436	0.000000	2.0	2.0	0.0	16.7
14.5	0.050250	0.000000	2.0	2.0	0.0	16.9
15.0	0.048207	0.000000	2.0	2.0	0.0	17.1
15.5	0.046325	0.000000	2.0	2.0	0.0	17.3
16.0	0.044539	0.000000	1.9	1.9	0.0	17.5
16.5	0.042883	0.000000	1.9	1.9	0.0	17.6
17.0	0.041323	0.000000	1.8	1.8	0.0	17.8

downwind distance (ft)	centerline conc. (mole frac.)	ground conc. (mole frac.)	Endpoint3 1/2 width (ft)	Endpoint2 1/2 width (ft)	Endpoint1 1/2 width (ft)	centerline height (ft)
17.5	0.039843	0.000000	1.8	1.8	0.0	18.0
18.0	0.038462	0.000000	1.7	1.7	0.0	18.2
18.5	0.037167	0.000000	1.7	1.7	0.0	18.3
19.0	0.035932	0.000000	1.6	1.6	0.0	18.5
19.5	0.034775	0.000000	1.5	1.5	0.0	18.6
20.0	0.033676	0.000000	1.5	1.5	0.0	18.8
20.5	0.032634	0.000000	1.4	1.4	0.0	19.0
21.0	0.031644	0.000000	1.3	1.3	0.0	19.1
21.5	0.030709	0.000000	1.1	1.1	0.0	19.3
22.0	0.029818	0.000000	1.0	1.0	0.0	19.4
22.5	0.028964	0.000000	0.8	0.8	0.0	19.6
23.0	0.028158	0.000000	0.6	0.6	0.0	19.7
23.5	0.027390	0.000000	0.1	0.1	0.0	19.9

	Endpoint (mole frac., mixture)	Downwind Distance (feet)	Approximate Time (seconds)
1	0.054704 (LFL)	13.5	3
2	0.027352 (1/2 LFL)	23.5	6
3	0.027352 (1/2 LFL)	23.5	6




Momentum Jet Contours - Side View
Battery Malfunction Flammable [LG_JF2-Flamm]
LFL
1/2 LFL
Height (feet)
Downwind Distance(feet)


Momentum Jet Concentration
Battery Malfunction Flammable [LG_JF2-Flamm]
Centerline Concentration
Ground Level Concentration
Concentration (mole fraction)
Downwind Distance (feet)

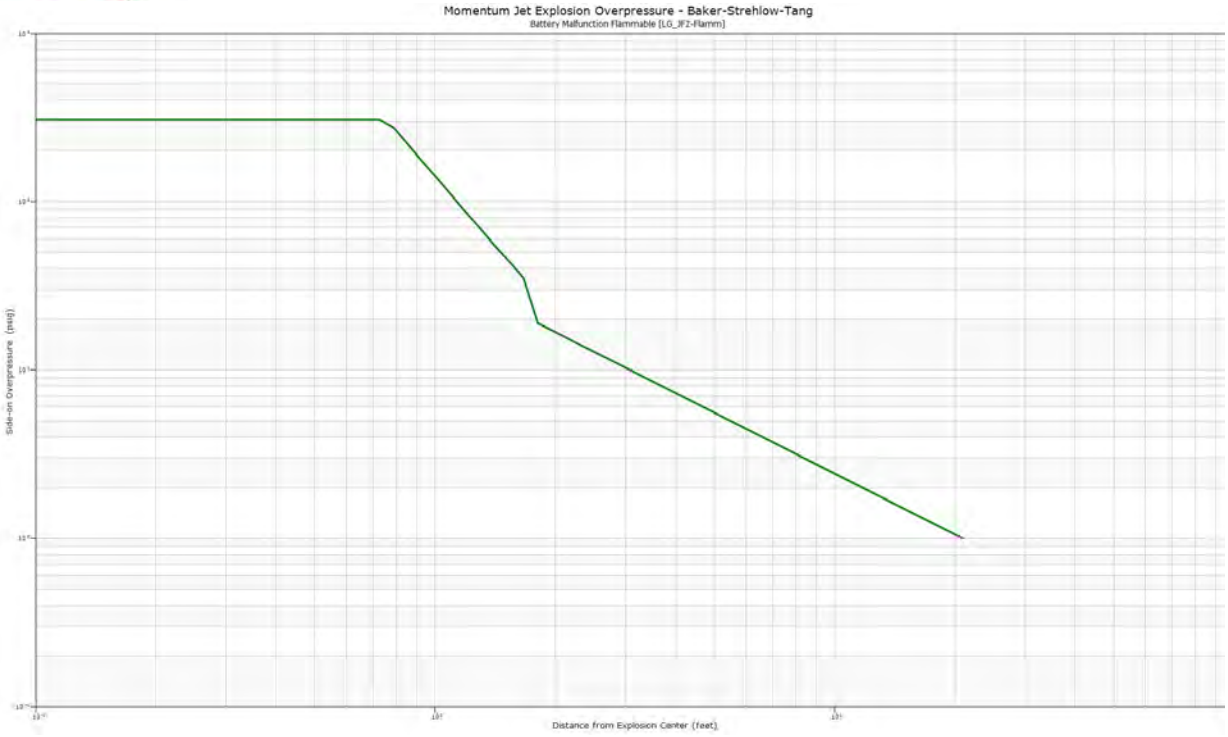
Momentum Jet Explosion

Fuel Reactivity: High Obstacle Density: High
Flame Expansion: 3-D Flame Speed: 5.20

Mass of released material involved in explosion: 0.0397888 lbs.

Distance from Center of Flammable Cloud (feet)	Overpressure (psi gauge)	Impulse (psi-s)
0.0	308.61	0.0183
0.5	308.61	0.0183
0.5	308.61	0.0169
0.6	308.61	0.0155
0.6	308.61	0.0143
0.7	308.61	0.0132
0.7	308.61	0.0122
0.8	272.80	0.0112
0.9	217.21	0.0104
0.9	172.95	0.0096
1.0	137.71	0.0088
1.1	109.65	0.0081
1.2	87.31	0.0075
1.3	69.52	0.0069
1.4	55.35	0.0064
1.5	44.07	0.0059
1.7	35.09	0.0054
1.8	18.98	0.0050
2.0	17.19	0.0046
2.1	15.56	0.0042
2.3	14.09	0.0039
2.5	12.75	0.0036
2.7	11.55	0.0033
3.0	10.45	0.0031
21.0	1.00	0.0005

The downwind distance to 3.00 psi is 17.2 feet
The downwind distance to 1.00 psi is 21.0 feet
The downwind distance to 1.00 psi is 21.0 feet


Momentum Jet Explosion Overpressure - Baker-Strehlow-Tang
Battery Malfunction Flammable [LG_JF2-Flamm]
Side-on Overpressure (psig)
Distance from Explosion Center (feet)