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4.4 BIOLOGICAL RESOURCES

This section provides a biological resource evaluation for the proposed Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). The Project will include a permanent operational facility, including the battery energy storage system (BESS) array, Project substation, associated equipment, roads, fencing, sound barrier, and stormwater retention basins which will be located on an approximately 40.3-acre parcel (Project site). Construction laydown areas will also be within the Project site. Energy will be transported from the Project substation to the nearby Pacific Gas and Electric (PG&E) Vaca-Dixon Substation through a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line, portions of which would be installed overhead and underground, sited on a gen-tie corridor of approximately 19.4 acres. The underground portions of the gen-tie line will run east-west parallel to and crossing Kilkenny Road, either within acquired easements on adjacent parcels (Underground Route Option #1) or within the City of Vacaville road right-of-way (Underground Route Option #2). The overhead portions include two structures on the Project site, four structures between Kilkenny Road and Interstate (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. A gen-tie laydown area of 7.2 acres will be located adjacent to the gen-tie corridor (Figure 1-3). The Project disturbance area, including the Project site, gen-tie corridor, and gen-tie laydown area will total approximately 65.9 acres.

The proposed Project facilities are located in Solano County, between the towns of Vacaville and Dixon, California, as illustrated in Figure 1-1. A Biological Resources Report was prepared for the proposed Project, which includes information on the biological resources in the Project vicinity; this includes descriptions of vegetation and land cover, natural communities, special status species with potential to occur in the Project vicinity, and associated figures. The Biological Resources Report is referenced in the sections below and included as Confidential Appendix 4.4-A.

4.4.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	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, U.S. Fish and Wildlife Service, or NOAA Fisheries?			X	
2.	Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?				X
3.	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?				X

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
4.	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?				X
5.	Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?			X	
6.	Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?			X	

4.4.2 Affected Environment[1, 2]

4.4.2.1 Regional Overview and General Habitat

The Project is located within the western portion of California's Central Valley within the Great Valley Ecoregion of California. This ecoregion is a broad, flat, alluvial plain about 50 miles wide and 400 miles long in the central part of California between the Sierra Nevada in the east and the Coast Range in the west. The Project site is located within the Sodic Claypan Terraces subsection of the Great Valley (Miles and Goudy 1997). This region has a typical Mediterranean climate with hot dry summers and cool wet winters. The average high temperatures range from 95.2 degrees Fahrenheit (°F) in July to 55.4 °F in January, and the average low temperatures range from 36.7 °F in December to 56.1 °F in July. The total average annual precipitation is 24.5 inches, occurring primarily between November and March (WRCC 2024).

The Project site, gen-tie corridor, and gen-tie laydown area are located within the Allendale 7.5-minute U.S. Geological Survey (USGS) quadrangle in Township 6 north, Range 1 east, and Section 6. Currently, the proposed Project site and gen-tie corridor are used as agricultural lands. The land surrounding the Project site is also in agricultural use. Project site elevation ranges from 75 feet to 77 feet above mean sea level with little to no microtopography. Soils within the Project disturbance area include (NRCS 2024):

- Capay clay, 0 percent slopes, Major Land Resource Area (MLRA) 17;
- Clear Lake clay, 0 to 2 percent slopes, MLRA 17;
- San Ysidro sandy loam, 0 to 2 percent slopes;
- Ysidro sandy loam, thick surface, 0 to 2 percent slopes;
- Water; and
- Yolo loam, clay substratum.

[1] Appendix B (g) (1)
[2] Appendix B (g) (13) (A)

4.4.2.2 Desktop Evaluation and Field Surveys[3,4]

A full description of database searches, surveys, and results is included in the Biological Resources Report (Confidential Appendix 4.4-A); a summary is provided below.

Desktop Evaluation

The following biological databases were queried for records of special status plants, natural communities, and wildlife that might have potential to occur in the Project vicinity.

- California Department of Fish and Wildlife (CDFW) California Natural Diversity Database (CNDDB) search for documented occurrences within a 10-mile radius of the Project disturbance area (i.e., Project site, gen-tie corridor, and gen-tie laydown area) (CDFW 2024a);
- U.S. Fish and Wildlife Service (USFWS) Information, Planning, and Consultation System for the Project disturbance area (USFWS 2024a); and
- California Native Plant Species online Inventory of Rare and Endangered Vascular Plants of California for the Allendale (3812148) USGS 7.5-minute quadrangle, and the 13 surrounding quadrangles within 10 miles of the Project disturbance area, including Birds Landing (3812127), Denverton (3812128), Liberty Island (3812136), Dozier (3812137), Elmira (3812138), Sacon (3812146), Dixon (3812147), Merritt (3812157), Winters (3812158), Fairfield North (3812231), Mt. Vaca (3812241), and Monticello Dam (3812251) (CNPS 2024a).

Other information sources consulted to determine which special status species could potentially occur in the Project vicinity included:

- Natural Resources Conservation Service Web Soil Survey (NRCS 2024);
- USFWS National Wetland Inventory maps (USFWS 2024b);
- Sensitive Natural Community data queried within 10 miles of the Project disturbance area using the occurrence of Important Bird Areas, sensitive plant communities, and designated critical habitat (Audubon 2024; CNPS 2024a; USFWS 2024a);
- Wildlife movement and connectivity models in CDFW BIOS6 Viewer including the Habitat Connectivity Viewer and Ungulate Migration Viewer (CDFW 2024b); and
- Aerial imagery (Google 2024).

Figure 4.4-1 and Figure 4.4-2 portray the results of 10-mile radius CNDDB records searches for plants and wildlife. Confidential Appendices 4.4-B and 4.4-C portray the results of 3-mile radius CNDDB records searches for plants and wildlife. The scale of the confidential appendices was reduced to the scale as a standard USGS quadrant (1:24,000) rather than 1:6,000 to decrease the size of the map book while still clearly presenting CNDDB spatial data detail. Additionally, the radius was limited to 3 miles around the Project site because the potential impact to biological resources as a result of the Project would not extend beyond this 3-mile radius. Supplemental CNDDB mapping will be provided upon request.

[3] Appendix B (g) (13) (A)
[4] Appendix B (g) (13) (D) (i) and (g) (13) (D) (ii)

Field Surveys

Multiple field surveys were conducted as described in Confidential Appendix 4.4-A, Biological Resources Report. These included a biological reconnaissance-level assessment, Swainson's hawk (*Buteo swainsoni*) nest survey, burrowing owl (*Athene cunicularia*) nest survey, and an aquatic resources delineation (Appendix 4.4-D). The survey area varied based on the biological resource and is further described in the subsections below. Not all of the survey area was able to be surveyed in the field due to inaccessible private property. However, the portions that were not surveyed were analyzed using aerial imagery and from adjacent accessible areas. Survey efforts are summarized in Table 4.4-1 and representative site photographs are available in Appendix C of the Biological Resources Report (Appendix 4.4-A). Survey methods are described below.

Table 4.4-1. Field Survey Types, Dates, and Personnel Involved

Survey Type	Date	Personnel
Reconnaissance-level survey	June 1, 2023	Rachel Bennett (ICF; biologist)
Swainson's hawk nest surveys	March 16, 2023; April 13, 2023; April 14, 2023; April 19, 2023; June 27, 2023; June 28, 2023; June 29, 2023	Ross Wilming (ICF; biologist)
Burrowing owl nest surveys	May 23, 2024; May 24, 2024; June 17, 2024; July 10, 2024	Kaitlin Kozlowski and Austin Kozlowski (ICF; biologists)
Aquatic resources delineation surveys	June 1, 2023 (preliminary aquatic resource assessment); May 28, 2024 (formal aquatic delineation)	Rachel Bennett (ICF; biologist); Joe Sanders (ICF; wetland ecologist)

Reconnaissance Survey

Initial reconnaissance-level field surveys were conducted by ICF International Inc. (ICF) on June 1, 2023. The survey evaluated biological communities occurring onsite and biological information was collected including potential aquatic resources, vegetation communities, plant and wildlife species observed, and special habitat features to determine the potential for special status species that may occur within the Project disturbance area (Project site, gen-tie corridor, and gen-tie laydown area) plus a 250-foot buffer. Inaccessible areas were surveyed with the uses of binoculars.

The results of the reconnaissance-level field surveys were used to inform the subsequent surveys of the Project vicinity. Special status species occurrences during surveys are included in Section 4.4.2.3.

Swainson's Hawk Nest Surveys

Swainson's hawk surveys, which followed the recommendations outlined in the *Recommended Timing and Methodology for Swainson's Hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000), occurred on March 16, 2023 (Period I); April 13, 2023, April 14, 2023, and April 19, 2023 (Period III); and June 27 through June 29, 2023 (Period V). The survey area consisted of a 0.5-mile buffer of the Project site and gen-tie corridor. The majority of the surveys were conducted as windshield surveys; however, on-foot surveys were required at some locations where vehicle access or parking was unavailable. Binoculars and a spotting scope were used to observe bird species, locate nests, and aid in the identification of wildlife species observed. Trees and nests were surveyed from multiple angles to increase the chance of detecting raptors or nests.

Burrowing Owl Nest Surveys

Burrowing owl nest surveys were conducted on May 23 and 24, 2024, June 17, 2024, and July 10, 2024, in accordance with the 2012 *Staff Report on Burrowing Owl Mitigation* from the California Department of Fish and Game (CDFG 2012). The survey area consisted of a 500-foot buffer of the Project disturbance area. The surveys were conducted on foot with the aid of binoculars and a spotting scope. Where access was restricted due to private property, the survey was conducted from the roadside or adjacent parcels where access was provided.

During the surveys, biologists assessed the suitability of habitat within the survey area to support burrowing owl. In addition, any signs or observations of burrowing owls' presence, burrows of sufficient size for burrowing owl use, and any burrow surrogates (e.g., culverts or pipes large enough to allow owl use but small enough to exclude predators, rubble piles) were documented during the surveys, if present.

Aquatic Resources Delineation Surveys

A preliminary aquatic resource assessment was conducted as part of the reconnaissance-level survey conducted on June 1, 2023. Following the reconnaissance assessment, a formal aquatic resources delineation was conducted on May 28, 2024. The aquatic resources delineation was conducted in accordance with the *Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratory 1987) and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0, USACE 2008). Vascular plants were idented using the *Jepson Manual: Vascular Plants of California* (Baldwin et al. 2012) and nomenclature and associated wetland ratings followed the National Wetland Plant Lists (USACE 2022).

The survey area for the aquatic resource delineation included the Project disturbance area and a 250-foot buffer. A total of 2.96 acres (9,047 linear feet) of aquatic resources were delineated within the survey area consisting of four aquatic resource types and 17 individual aquatic features (Appendix A of Appendix 4.4-D). The four aquatic resource types include a basin, ditches, intermittent riverine, and seasonal wetlands. The acreage, linear feet, and proposed jurisdiction as they relate to waters of the United States (WOTUS), waters of the State, and California Fish and Game Code Section 1602 is included in Table 4.4-2. A description of each of the aquatic resource types is presented below. See Appendix 4.4-D for the Aquatic Resources Delineation Report[5], which includes detailed delineation methodology, results of the delineation, jurisdictional features, and representative photographs of the aquatic resources identified in the survey area.

Basin

There is one mapped basin in the survey area encompassing 0.020 acre. This feature occurs within the PG&E Vaca-Dixon Substation and was not observable during the aquatic resource delineation survey, and therefore, mapped using aerial imagery. This feature likely drains surface runoff from the substation and could regularly be maintained, and it appears to be excavated in uplands. This feature does not fit well within the Cowardin classification system (Cowardin et al. 1979).

[5] Appendix B (g) (13) (D) (ii)

Ditch

There are thirteen mapped ditches in the survey area encompassing 1.932 acres and extending 7,138 linear feet. Features outside of the PG&E Vaca-Dixon Substation were mapped based on the presence of an ordinary high-water mark and features within the substation were mapped remotely. These features either receive pumped water for irrigation purposes, drain impervious areas within the substation, or drain orchards. Mapped ditches vary in their bottom composition including both concrete-lined bottoms and soil bottoms. These features do not appear to be realigned natural features, are excavated in uplands and appear to be subject to regular maintenance. These features do not fit well within the Cowardin classification system (Cowardin et al. 1979).

Intermittent Riverine

There is one mapped intermittent riverine feature encompassing 0.932 acre and extending 1,909 linear feet that is a reach of Gibson Canyon Creek. This feature likely flows part of the year and dries up in the late summer. Low flows were observed during the May 28, 2024, survey. This feature appears to be subject to some maintenance as the banks are mostly straight and some of it is concrete lined, which indicates some realignment of this feature. This feature was mapped in the field based on the presence of an ordinary high-water mark. This feature could be classified as *riverine, intermittent* by the Cowardin classification system (Cowardin et al. 1979).

Seasonal Wetland

There are two mapped seasonal wetlands present in the survey area encompassing 0.076 acre. Both features occur on the PG&E Vaca-Dixon Substation property. Both features were dominated by hydrophytic vegetation including creeping wildrye (*Elymus triticoides*), curly dock (*Rumex crispus*), hyssop loosestrife (*Lythrum hyssopifolia*), and seaside barley (*Hordeum marinum*). Prevalent algal matting was observed within both mapped seasonal wetlands. These features were mapped based on the presence hydrophytic vegetation and primary hydrology indicators and were bounded by upland nonnative annual grassland. These features could be classified as *palustrine, emergent* by the Cowardin classification system (Cowardin et al. 1979).

Table 4.4-2. 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

Feature ID	Acres	Linear Feet	Proposed Jurisdiction
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

1602 – California Fish and Game Code Section 1602

4.4.2.3 Terrestrial and Aquatic Biological Resources and Habitats in the Project Vicinity and at the Proposed Project Site[6,7,8]

Land cover types were recorded in the Project vicinity during the reconnaissance-level survey on June 1, 2023. The Project vicinity includes five upland land covers consisting of annual grasslands, fallow farmlands, nonnative forests, orchards, and developed or disturbed areas. The predominant land cover types in the Project vicinity are row crops and orchards. In addition, four types of aquatic features were mapped within the Project vicinity including, a basin, ditches, an intermittent riverine, and seasonal wetlands. A description of each of these landcovers is provided below.

Annual Grasslands

Annual grasslands occur in the vicinity of the PG&E Vaca-Dixon Substation and consist primarily of non-native grass species. The annual grasslands are dominated by non-native annual grasses and forbs including wild oats (*Avena* spp.), ripgut brome *(Bromus diandrus*), cheatgrass (*Bromus tectorum*) yellow star thistle (*Centaurea solstitialis*), radish (*Raphanus* sp.) and filarees (*Erodium* spp.).

Fallow Farmlands

The entirety of the 40.3-acre Project site was composed of fallow farmland at the time of the reconnaissance-level survey in 2023. Fallow farmland is land that was not currently being used for crop cultivation in the current vegetation cycle. This area has historically been used in row crop rotations.

[6] Appendix B (g) (13) (A) (i) through (g) (13) (A) (viii)
[7] Appendix B (g) (13) (B)
[8] Appendix B (g) (13) (C)

Non-Native Forests

The non-native forests are located along the gen-tie line, north of Interstate 80. This area was dominated by olive trees (*Olea europea*) and red gum (*Eucalyptus camaldulensis*) with oleander (*Nerium oleander*) and other non-native and ruderal plant species. This area occurs in the vicinity of the PG&E Vaca-Dixon Substation.

Orchard

Orchards (almond, cherry/plum) account for a large portion of the gen-tie corridor, where the gen-tie line will be constructed, and the gen-tie laydown area. There are orchards to the west and northwest of the 40.3-acre Project site.

Developed/Disturbed

Developed/disturbed areas within the Project vicinity include portions along the gen-tie corridor that intersect with Kilkenny Road, I-80, and the Vaca-Dixon Substation. Narrow margins along roads and fields where vegetation management and other reoccurring disturbance occurs were also considered developed/disturbed.

The proposed Project site and gen-tie corridor, including construction laydown areas, comprise agricultural lands consisting either of fallow farmlands or orchards. The 40.3-acre Project site will include permanent operational facility, including the BESS array, Project substation, associated equipment, roads, fencing, sound barrier, and stormwater ponds occurs in fallow farmland. The 19.4-acre gen-tie corridor occurs within the orchards. The 7.2-acre gen-tie laydown area will also occur within the orchards.

4.4.2.4 Special Status Species

Tables 4.4-3 and 4.4-4[9] list the special status species that have the potential to occur within one mile of the Project site and within 1,000 feet from the outer edge of linear facility corridors. Species assessed to have no potential for occurrence or as absent are not included below, for a complete list of species including those with no potential for occurrence, see Confidential Appendix 4.4-A. Each species was evaluated for its potential to occur through literature review and field observations and is categorized as defined below.

- **Low:** Species is not likely to occur because of marginal habitat quality, distance from known occurrences, and/or lack of recent occurrences within the Project vicinity.
- **Moderate:** Some or all of the species' life history requirements are provided by habitat in the Project vicinity; populations may not be known to occur in the Project vicinity but are known to occur in the region.
- **High/Present:** All of the species' life history requirements can be met by habitat present in the Project disturbance area, populations are known to occur in the Project disturbance area or immediate vicinity, and/or species was observed during surveys in the Project vicinity.

[9] Appendix B (g) (13) (C) (i)

Special Status Plants

The special status plant species identified in the records search and its potential for occurrence within one mile of the Project site and within 1,000 feet from the outer edge of linear facility corridors based on the habitat present and surveys is summarized in Table 4.4-3. The vast majority of the Project site provides low-quality habitat for special status plant species due to the high level of disturbances associated with agricultural activity. No special status plant species were observed during the 2023 or 2024 field surveys. A full list of the plant species observed during the 2023 and 2024 field surveys is provided in Confidential Appendix 4.4-A. Figure 4.4-1 displays the results of the 10-mile radius CNDDB plant records search, and Confidential Appendix 4.4-B displays these results within a 3-mile radius of the Project site (CDFW 2024a).

Table 4.4-3. Special Status Plant Species with Potential to Occur

Plant Family: Scientific Name/ Common Name	Status[1/]			Habitat / Typical Elevation (feet [ft])	Blooming Period	Potential for Occurrence within 1 mile of the Project site and 1,000 feet from outer edge of linear facility corridors
	Federal	State	CNPS			
Limosella australis / Delta mudwort	-	-	2B.1	Occurs usually in streambanks or mud banks, freshwater or brackish marshes and swamps, and riparian scrub. Below 10 ft.	May to August	Low: This species has a low potential to occur within the marginal habitat in Gibson Canyon Creek. There are no CNDDB occurrences within 10 miles of the Project site.

CNDDB – California Natural Diversity Database; CNPS – California Native Plant Society
1/ Status designations are as follows:
CNPS California Rare Plant Rank (CRPR):
(2B) Rare, threatened, or endangered in California but common elsewhere
Threat Rank:
0.1 Seriously threatened in California (over 80% of occurrences threatened / high degree and immediacy of threat)

Sources: CDFW 2024a; CNPS 2024a

California Natural Diversity Database

- Baker's navarretia
- Boggs Lake hedge-hyssop
- Bolander's water-hemlock
- Brewer's western flax
- California alkali grass
- Carquinez goldenbush
- Colusa grass
- Contra Costa goldfields
- Coulter's goldfields
- Crampton's tuctoria or Solano grass
- Ferris' milk-vetch
- Heckard's pepper-grass
- Keck's checkerbloom
- Mason's lilaeopsis
- San Joaquin Valley Orcutt grass
- San Joaquin spearscale
- Suisun Marsh aster
- adobe-lily
- alkali milk-vetch
- alkali-sink goldfields
- bearded popcornflower
- brittlescale
- dwarf downingia
- fragrant fritillary
- heartscale
- hispid salty bird's-beak
- legenere
- oval-leaved viburnum
- pappose tarplant
- recurved larkspur
- saline clover
- two-fork clover
- vernal pool smallscale
- woolly rose-mallow

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.4-1 CNDDB Special Status Plants within a 10-mile radius of the Project Site

Solano County, CA

- Buffer (10-mile)

Proposed Features

- Project Site

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:350,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 5 10 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Special Status Wildlife

The Project disturbance area may support an assortment of wildlife species and may provide shelter, foraging, nesting, roosting, and breeding habitat should species occur in the vicinity. However, due to lack of complex vegetation communities within the Project disturbance area and regular disturbances associated with agricultural practices in the Project vicinity, the wildlife habitat suitability in the vicinity of the Project site can be considered low.

During the field surveys, two special status bird species were observed within the 0.5-mile Swainson's hawk survey buffer, including Swainson's hawk, a state threatened species, and white-tailed kite (*Elanus leucurus*), a California Fully Protected species. In addition, habitat surrounding the vicinity of the Project may also support habitat for several special status species including the following: Crotch's bumble bee (*Bombus crotchii*), a state candidate species; monarch butterfly (*Danaus plexippus*), federal candidate species; western pond turtle (*Actinemys marmorata*), a federal candidate species and CDFW Species of Special Concern (SSC); grasshopper sparrow (*Ammodramus savannarum*), a CDFW SSC; burrowing owl, a CDFW SSC; golden eagle (*Aquila chrysaetos*), a California Fully Protected and Watch List species; northern harrier (*Circus cyaneus*), a CDFW SSC; bald eagle (*Haliaeetus leucocephalus*), a state endangered and California Fully Protected species; and western red bat (*Lasiurus blosseevilli*), a CDFW SSC. A full list of wildlife species observed during the field surveys provided in Confidential Appendix 4.4-A.

These special status wildlife species observed during the field surveys and those with the potential to occur in the within one mile of the Project site and within 1,000 feet from the outer edge of linear facility corridors based on the habitat present and surveys are summarized in Table 4.4-4. The results of a 10-mile radius CNDDB wildlife records search is included in Figure 4.4-2.Confidential Appendix 4.4-C displays these results within a 3-mile radius of the Project site (CDFW 2024a).

Table 4.4-4. Special Status Wildlife Species with Potential to Occur

Scientific Name / Common Name	Status[1/]		Typical Habitat	Potential for Occurrence within 1 mile of the Project site and 1,000 feet from outer edge of linear facility corridors
	Federal	State		
Invertebrates				
Bombus crotchii / Crotch's bumble bee	-	CE	Found in open grasslands and scrub. Nest underground in abandoned rodent burrows. Individuals forage on milkweed, pincushion (*Chaenactis* sp.), lupine (*Lupinus* sp.), bur clover (*Medicago* sp.), phacelia (*Phacelia* sp.), and sage (*Salvia* sp.).	Low. There is a low potential for this species to occur. No common foraging plants were found within the Project site during the field surveys; however, the Project site is within the range of this species. There is one CNDDB occurrences within 10 miles of the Project site.
Danaus plexippus / Monarch butterfly	FC	-	Open habitats including fields, meadows, weedy areas, marshes, and roadsides. Monarch butterflies roost in wind-protected tree groves (such as eucalyptus) with nectar and water sources nearby. Caterpillar host plants are native milkweeds (*Asclepias* spp.).	Low. There is a low potential for this species to forage and migrate through the site vicinity. No milkweed host plants were observed during the field surveys. There are no CNDDB occurrences within 10 miles of the Project site.

Scientific Name / Common Name	Status[1/]		Typical Habitat	Potential for Occurrence within 1 mile of the Project site and 1,000 feet from outer edge of linear facility corridors
	Federal	State		
Reptiles				
Actinemys marmorata / western pond turtle	PT	SSC	A thoroughly aquatic turtle of ponds, marshes, rivers, canals, streams and irrigation ditches, usually with aquatic vegetation, below 6,000 feet elevation. Needs basking sites and suitable (sandy banks or grassy open fields) upland habitat for egg-laying.	Low. There is a low potential for this species to occur as Gibson Canyon Creek is the only suitable aquatic habitat present nearby; however, the banks of the creek are likely too steep for use by pond turtles. Suitable upland habitat is present within the area. There are 17 CNDDB occurrences within 10 miles of the Project site, with the closest occurrence located approximately 1.6 miles to the southwest.
Birds				
Ammodramus savannarum / grasshopper sparrow	-	SSC	Occurs in short to medium height dry grasslands with scattered shrubs in the Central Valley, Sierran foothills, and south coast. Found in prairies and pastures in largely forest areas along the north coast. Nests on the ground in grass or at the base of shrubs.	Low. There is a low potential for this species to occur. The Project vicinity has marginal habitat for this species. There are two CNDDB occurrences within 10 miles of the Project site.
Athene cunicularia / burrowing owl	-	CE	Open, dry annual or perennial grasslands, deserts, and scrublands characterized by low-growing vegetation with available burrows.	Moderate. There is a moderate potential for this species to occur. This species is known to occur in the vicinity and there are some suitable nesting and foraging habitats present within the vicinity of the Project site; however, no burrowing owls were detected during the 2024 surveys. There are 88 CNDDB occurrences within 10 miles of the Project site, with the closest occurrence located approximately 1 mile northeast.
Aquila chrysaetos / golden eagle	BGEPA	FP / WL	Rolling foothills, mountain areas, sage-juniper flats, and desert that provide abundant prey. Cliff-walled canyons provide nesting habitat in most parts of range; also, large trees in open areas.	Low. There is a low potential for this species to occur. Marginal foraging habitat is present within the Project vicinity, although no suitable nesting habitat is present. Potential presence is anticipated to be limited to rare flyovers of the Project site. There are no CNDDB occurrences within 10 miles of the Project site.
Buteo swainsoni / Swainson's hawk	-	T	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, and agricultural or ranch lands with groves or lines of trees. Requires adjacent suitable foraging areas, such as grasslands or alfalfa or grain fields supporting rodent populations.	Present. There is a high potential for this species to occur and this species was observed during field surveys. Two pairs of Swainson's hawk were observed with active nests in the vicinity of PG&E Vaca-Dixon Substation. In addition, suitable foraging and nesting habitat is present in the Project Vicinity. There are 200 CNDDB occurrences within 10 miles of the Project site, with over 10 occurrence located within 1 mile.
Circus cyaneus / Northern harrier	-	SSC	Coastal salt and freshwater marshes; nesting and foraging habitats in grasslands and agricultural fields.	Low. There is a low potential for this species to occur. Suitable foraging and nesting habitats are present within the Project vicinity. There are two CNDDB occurrences within 10 miles of the Project site.
Elanus leucurus / white-tailed kite	-	FP	Rolling foothills or valley areas with scattered oaks and river bottomlands or marshes near open grasslands for foraging.	Present. There is a high potential for this species to occur and this species was observed during field surveys. Suitable foraging lands within the grasslands and agricultural areas and large trees for nesting is present within the vicinity of the Project site. There are five CNDDB occurrences within 10 miles of the Project site with the closest occurrence approximately 0.9 mile to the southwest.

Scientific Name / Common Name	Status[1/]		Typical Habitat	Potential for Occurrence within 1 mile of the Project site and 1,000 feet from outer edge of linear facility corridors
	Federal	State		
Haliaeetus leucocephalus / bald eagle	BGEPA	E / FP	Requires large bodies of water with an abundant fish population. Feeds on fish, carrion, small mammals, and waterfowl. Nests are usually located within a 1-mile radius of water. Nests are most often situated in large trees with a commanding view of the area.	Low. There is a low potential for this species to occur. No suitable foraging and nesting habitats are present within the Project vicinity. Potential presence is anticipated to be limited to rare flyovers of the Project site. There is one CNDDB occurrence within 10 miles of the Project site.
Mammals				
Lasiurus blosseevilli / Western red bat	-	SSC	Found primarily in 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.	Low. There is a low potential for this species to occur. The orchards surrounding the Project site may provide suitable roosting habitat. There is one CNDDB occurrences within 10 miles of the Project site.

CNDDB – California Natural Diversity Database

1/ Status designations are as follows:
Federal Designations:
(FC) Federal Candidate, (PT) Proposed Threatened; (BGEPA) Bald and Golden Eagle Protection Act
State Designations:
(E) State Endangered, (T) State Threatened, (CE) Candidate Endangered, (SSC) Species of Special Concern, (FP) Fully Protected, (WL) Watch List

Sources: CDFW 2024a; USFWS 2024a

California Natural Diversity Database

- American badger
- American bumble bee
- American peregrine falcon
- Blennosperma vernal pool andrenid bee
- California linderiella
- California tiger salamander - central California DPS
- Conservancy fairy shrimp
- Crotch's bumble bee
- Delta green ground beetle
- Ricksecker's water scavenger beetle
- Swainson's hawk
- Townsend's big-eared bat
- Wilbur Springs shorebug
- Yuma myotis
- bald eagle
- burrowing owl
- foothill yellow-legged frog - north coast DPS
- giant gartersnake
- grasshopper sparrow
- great egret
- green sturgeon - southern DPS
- midvalley fairy shrimp
- mountain plover
- northern harrier
- tricolored blackbird
- valley elderberry longhorn beetle
- vernal pool fairy shrimp
- vernal pool tadpole shrimp
- western bumble bee
- western pond turtle
- western red bat
- western ridged mussel
- white-tailed kite
- yellow-breasted chat

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.4-2 CNDDB Special Status Wildlife within a 10-mile radius of the Project Site

Solano County, CA

- Buffer (10-mile)

Proposed Features

- Project Site

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:350,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 12.5 25 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

Z:\Projects\1109_0319_NextEra_Corby_BESS\Layouts\PD_Figs\PD_Figs\PD_Figs.aprx

4.4.3 Environmental Analysis[10, 11]

This section summarizes the potential direct and indirect impacts on biological resources to determine the permanent and temporary effects of construction and operation of the proposed Project. Impacts to protected species will be minimized or avoided by the Project Design (PD) Measures described in Section 4.4.5.

4.4.3.1 Temporary Impacts

Temporary impacts are those that will be restored following construction and will have reversible effects on biological resources. This type of impact includes the temporary loss of potentially suitable habitat from clearing and grubbing, the installation of a temporary laydown area, grading beyond the perimeter of the permanent Project features. Temporary construction laydown areas will be used for construction trailers, employee parking, laydown, staging, and storage of construction materials, and will be located within the 40.3-acre Project site and an additional gen-tie laydown area will be located west of the overhead portion of the gen-tie line, within an Applicant-owned parcel on 7.2-acres of land. The Project will result in a total disturbance area of approximately 65.9 acres, of which only approximately 28.4 acres of potentially suitable habitat will be temporarily disturbed as a result of the Project. The 28.4 acres of temporary impacts will occur within the 40.3-acre Project site and PG&E Vaca-Dixon Substation parcel, and will be limited to areas of non-permanent structures such as the construction laydown areas and PG&E parcel. These areas will be temporarily impacted and revegetated following construction completion. With the implementation of the PD Measures outlined in Section 4.4.5, no significant impact will result from Project activities and no further mitigation is required.

4.4.3.2 Permanent Impacts

Permanent impacts are those that will not be restored after construction and will result in the irreversible removal of biological resources during the life of the Project. This type of impact will include the loss of potentially suitable habitat from the installation of the BESS equipment, Project substation, access roads, fencing, stormwater ponds, and sound barrier. In addition, clearing of the orchard within the gen-tie corridor and gen-tie laydown area will result in permanent habitat modifications. The Project will result in a total of approximately 15.9 acres of permanent disturbance to the 40.3-acre Project site through installation of the BESS equipment, Project substation, access roads, and stormwater ponds. In addition, the gen-tie corridor and gen-tie laydown area will result in the permanent clearing of up to 21.6 acres of orchard lands, which will result in a net benefit of suitable habitat lands for the majority of special status and common species which occur in the Project vicinity. With the implementation of the PD Measures outlined in Section 4.4.5, and a net gain of beneficial habitat lands as a result of construction activities, no significant impact will result from Project activities and no further mitigation is required.

[10] Appendix B (g) (1)
[11] Appendix B (g) (13) (E) and (g) (13) (E) (i)

4.4.3.3 Direct Impacts

Direct impacts are those that are caused by the Project action, occur at the same time and place, and include temporary and permanent impacts. Preparation and construction activities within the Project disturbance area (Project site, gen-tie corridor, and gen-tie laydown area) will result in temporary and permanent disturbance, which may provide suitable habitat for some special status species or their prey. Direct impacts on special status species could result in direct mortality, injury, or harassment of individuals through construction activities such as strikes from moving vehicles or heavy equipment, movement of construction materials, burrow collapse associated with earthwork, excavation or grading, placement of spoils and/or fill materials, and through vegetation clearing activities. Trash left at the Project site by construction workers could also attract predators, such as ravens and coyotes, resulting in increased chances for injuries or mortality.

Direct impacts during operations and maintenance will be very minimal, as BESS operations include minimal onsite activity; the facility will be unstaffed and will require infrequent vehicle usage for operations and maintenance.

With the implementation of the PD Measures outlined in Section 4.4.5, no significant impact will result from Project activities and no further mitigation is required.

4.4.3.4 Indirect Impacts

Indirect impacts are those that are caused by or result from the proposed action and are later in time, but reasonably certain to occur. In contrast to direct impacts, indirect impacts are subtler and could affect individuals and populations and habitat quality over an extended period of time, long after construction activities have been completed.

The results of preparation, construction, and operation activities may lead to indirect impacts. Additional use of roadways surrounding the Project vicinity during construction and operation increases the likelihood of collisions between vehicles and special status species trying to cross the road. An increase in human activity could result in an increase in food or trash left behind, which could attract predators. In addition, materials and equipment left behind following construction activities could entrap or entangle special status species, attract predators, or provide shelter for native species, which when removed could result in displacement or injury of the species. Facility noise and lighting may also attract or deter certain species from the Project vicinity.

Facility infrastructure could provide perching opportunities for ravens and raptors, and natural predation rates could be altered or increased when natural habitats are disturbed or modified.

With the implementation of the PD Measures outlined in Section 4.4.5, no significant impact will result from Project activities and no further mitigation is required.

4.4.3.5 Impacts to Special Status Plant Species

No special status plant species were observed during the 2023 reconnaissance-level field survey for the Project. Only one special status plant species has the potential to occur within the Project vicinity (Table 4.4-3). It is highly unlikely that any special status plant species will occur within the Project

disturbance area due to the historical disturbances associated with agricultural production, and the habitat where the species is found.

Delta Mudwort

Species Description

The Delta mudwort (*Limosella australis*) is a California Rare Plant Rank (CRPR) 2B.1 species. This species does not hold a listing status under the California Endangered Species Act (ESA)or federal ESA. A CRPR 2B.1 species is considered rare, threatened, or endangered in California but common elsewhere and seriously threatened in California. The Delta mudwort is a perennial stoloniferous herb which blooms from May to August (CNPS 2024b). This species usually occurs on mud banks in streambanks, marshes and swamps or riparian scrub, up to an elevation of 10 feet above sea level (CNPS 2024b).

Occurrence in the Project Vicinity

There are no CNDDB recorded occurrences within 10 miles of the Project site.

Habitat Suitability

Gibson Canyon Creek is the only location that may provide marginal habitat for this species. This species is known to occur up to elevations of approximately 10 feet above mean sea level; however, the reach of Gibson Canyon Creek within the Project disturbance area is approximately 75 feet above mean sea level. For this reason, limited suitable habitat is present in the Project vicinity for Delta mudwort and the potential for this species to occur is considered low.

Potential for Adverse Effects

During construction and operations, the Project will avoid all impacts to Gibson Canyon Creek. For this reason, there will be no impacts to Delta mudwort.

4.4.3.6 Impacts to Special Status Wildlife Species[12]

As outlined in Table 4.4-4, numerous special status wildlife species have the potential to occur in the Project vicinity and could be impacted by the proposed Project. These species are discussed in detail in the following sections, including observations during biological surveys and the potential for adverse effects from Project activities.

Crotch's Bumble Bee

Species Description

Crotch's bumble bee is a state candidate endangered species. The historic range of Crotch's bumble bee extends from central California south to Mexico and includes coastal areas east to the edges of the deserts and the Central Valley, but typically excludes mountainous areas of California (Thorp et al. 1983; Williams et al. 2014). These social insects live in colonies composed of a queen, workers, and reproductive (males and new queens) (Hatfield et al. 2015). This species has a colonial life cycle, meaning the colonies are annual and only the new, mated queens overwinter. Crotch's bumble bees

[12] Appendix B (g) (13) (E)

are active from February through October (CDFW 2023). Queen bees emerge from overwintering in late February, peaking in April, with a second pulse in July and ending in later October. From late March through September the colony, consisting of males and worker bees, remains active (The Xerces Society et al. 2018, CDFW 2023).

Little is known about the specifics of Crotch's bumble bee, but like all bumble bees there are three basic habitat requirements: suitable overwintering sites for the queens, suitable nesting sites for the colonies, and available floral resources for the duration of the colony (The Xerces Society et al. 2018).

Bumble bee species overwinter in soft, disturbed soil or under debris such as leaf litter (CDFW 2023). In early spring, after overwintering, the queen bee emerges and begins foraging and searching for a suitable colony nesting site. Crotch's bumble bees do not dig or make their own nests, but primarily nests underground in abandoned small mammal burrows, downed debris such as woody cover, brush piles, or fallen logs and human-made structures such as rock walls may also be used (CDFW 2023, Williams et al. 2014). Crotch's bumble bee is a foraging generalist that feed on a variety of widely distributed plant genera, including sages (*Salvia* spp.), lupines (*Lupinus* spp.), medics (*Medicago* spp.), phacelias (*Phacelia* spp.), and milkweeds (*Asclepias* spp.) (Koch et al. 2012; Williams et al. 2014).

Occurrence in the Project Vicinity

There is one documented occurrences of Crotch's bumble bee within a 10-mile radius of the Project site (Figure 4.4-2). This documented occurrence, recorded in 2007, is located approximately 6.3 miles southwest of the Project (CDFW 2024a). In addition, iNaturalist has a record of eight "research grade[13]" occurrences within Solano County from 2022 to the present (iNaturalist 2024).

Habitat Suitability

Bumble bees depend on the availability of habitat that supplies a rich diversity of floral resources during the colony's lifetime. The Project disturbance area primarily consists of agricultural or developed lands and lacks floral diversity and common floral resources such as milkweed, lupine, phacelia, and sage that may be used by Crotch's bumble bee. The lack of habitat diversity surrounding the Project disturbance area decreases the likelihood of nesting and overwintering success of bumble bee colonies (The Xerces Society et al. 2018). In addition, near-surface disturbances associated with the land covers surrounding the Project area such as mowing, tilling, planting, and grazing negatively affect bumble bee colonies (The Xerces Society et al. 2018).

While the Project area is within the range of Crotch's bumble bee and small mammal burrows were observed onsite, the disturbances associated with agricultural practices and lack of floral resources in the vicinity of the Project area may preclude this species from the area. For this reason, the habitat suitability in the Project disturbance area is considered to be low.

Potential for Adverse Effects

Construction activities such as grading, excavation, or stockpiling of soil could alter potentially suitable Crotch's bumble bee habitat but are not anticipated to impact individual bumble bees or

[13] "Research grade" observations have media, location, a date, and a community consensus on a precise identification (usually at species-level)

nests. There has been no evidence of Crotch's bumble bee activity observed on the Project site and with the implementation of PD Measure **PD BIO-4**, which includes preconstruction surveys and avoidance of any active Crotch's bumble bee nest, there are no anticipated impacts to individual bumble bees or their nest.

The Project will result in up to 65.9 acres of disturbance resulting from construction of the Project site, clearance of the gen-tie corridor, and use of the gen-tie laydown area. Construction of the 40.3-acre Project site, 19.4-acre gen-tie corridor, and 7.2-acre gen-tie laydown area will result in both permanent and temporary impacts to low-quality habitat that may provide foraging, nesting, and estivation habitat for Crotch's bumble bee. The 40.3-acre Project site will result in the loss of fallow farmlands that may provide floral resources and potential nesting and estivation opportunities for this species. Permanently disturbed areas include the BESS array, Project substation, access and maintenance roads, perimeter fences, and the sound barrier will result in 15.9 acres of permanently disturbed habitat. Temporary habitat disturbance resulting from the laydown areas and non-permanent activities within the Project site and potentially suitable habitat areas within the gen-tie corridor include 28.4 acres and will be short term and will be reseeded and restored to functional habitat following construction activities.

Construction within the gen-tie corridor and gen-tie laydown will result in the permanent removal of 21.6 acres of orchards and minor impacts to developed and disturbed areas in the vicinity of the PG&E substation. The removal of the 21.6 acres of orchards and subsequent restoration of the gen-tie corridor and gen-tie laydown area will convert unsuitable orchard habitat to potentially suitable habitat. While construction within the 40.3-acre Project site will permanently remove 15.9 acres of potentially suitable habitat, conversion of the orchard lands will enhance 21.6 acres of orchard lands, resulting in a net benefit and additional 5.7 acres of habitat that may be used by Crotch's bumble bee should they occur in the Project vicinity in the future.

During the operation and maintenance phase of the Project, access to the facility will occur via the improved surface roads and is expected to be minimal and infrequent. The Project will not create any additional barriers to dispersal for Crotch's bumble bee, as they can fly over the facility. Thus, no impacts to this species are anticipated during the operations and maintenance phase of the Project.

The Project will result in additional habitat that may be utilized by Crotch's bumble bee in the future and, with the implementation of the PD Measures (**PD BIO-1** and **PD BIO-4**) outlined in Section 4.4.5 that aim to avoid or minimize impacts to individuals of this species, the Project will result in a less than significant impact to Crotch's bumble bee.

Monarch Butterfly

Species Description

The monarch butterfly is a candidate for listing under the federal ESA. Monarchs use numerous habitat types, providing milkweed and nectar are readily available. They have been documented in emergent and scrub-shrub wetlands, croplands, hedgerows, grasslands and old fields, dunes, savannas, suburban yards, roadsides, and open woodlands. Adult monarchs are opportunistic nectarivores and will feed seasonally on available floral resources. Monarchs lay eggs on, and the larvae feed only on, plants in the milkweed family, primarily those in the genus *Asclepias* (Zalucki and

Brower 1992). Monarch butterflies overwinter in coastal California where suitable microclimate conditions are found. In California, monarchs roost in wind-protected tree groves usually consisting of nonnative blue gum eucalyptus (*Eucalyptus globulus*) and native Monterey pine (*Pinus radiata*) and Monterey cypress (*Cupressus macrocarpa*). They may also roost in nonnative red gum eucalyptus (*Eucalyptus camadulensis*), or native western sycamore (Platanus racemose), coast redwood (*Sequoia semperviren*) or coast live oak (*Quercus agrifolia*) (Xerces Society 2016).

Occurrence in the Project Vicinity

There are no recorded CNDDB occurrences of monarch butterflies within 10 miles of the Project site.

Habitat Suitability

Larval host plants (i.e., milkweed) were not observed during the 2023 or 2024 field surveys and no roosting habitat is available in the Project vicinity. However, monarch butterflies are foraging generalist and may forage on available flowering plants in the vicinity of the Project site. Due to the lack of floral diversity within the Project disturbance area, the potential for monarch butterfly to occur is considered low.

Potential for Adverse Effects

Construction activities such as grading, excavation, or stockpiling of soil could fill, remove, or otherwise alter foraging habitat but are not anticipated to impact individual butterflies. Larval host plants and suitable roosting habitat are not present onsite. As such, there will be no impacts to these monarch butterfly resources. The potential for adverse impacts will be similar in nature for those described above for Crotch's bumble bee, which includes 15.9 acres of permanent disturbance and 28.4 acres of temporary disturbance to potentially suitable low-quality foraging habitat within the Project disturbance area.

Similarly, the Project will result in orchard removal and subsequent restoration of the gen-tie corridor and gen-tie laydown area, which will convert 21.6 acres of unsuitable orchard habitat to potentially suitable foraging habitat for monarch butterfly. This will result in a net benefit and additional 5.7 acres of habitat that may be used by monarch butterfly should they occur in the Project vicinity in the future.

During the operation and maintenance phase of the Project, access to the facility will occur via the improved surface roads and is expected to be minimal and infrequent. The Project will not create any additional dispersal barriers to dispersal. Thus, no impacts to this species are anticipated during the operations and maintenance phase of the Project.

With implementation of the PD Measures (**PD BIO-1**) outlined in Section 4.4.5 and the beneficial increase in habitat during construction, impacts to individuals of this species will be reduced to less than significant.

Western Pond Turtle

Species Description

The western pond turtle is a federally proposed threatened species and CDFW SSC that occurs in a variety of permanent and intermittent aquatic habitats, such as ponds, marshes, rivers, streams, and

ephemeral pools. Pond turtles require suitable basking and haul-out sites, such as emergent rocks or floating logs, which they use to regulate their temperature throughout the day (Holland 1994). This species may winter in an inactive state on land or in the water, or they may remain active and in the water throughout the year (Jennings and Hayes 1994). Western pond turtle has been documented hibernating underwater in mud, immediately adjacent to a watercourse, or as far as 1,150 feet from a watercourse (Jennings and Hayes 1994). Upland hibernacula may include any type of crack, hole, or object that a turtle seeking cover might squeeze into or burrow underneath. In addition to appropriate aquatic habitat, western pond turtle requires terrestrial habitat suitable for nesting. Nests are typically created in grassy open fields with soils that are high in clay or silt fraction. Egg laying usually occurs between March and August. The upland oviposition site is often within approximately 650 feet of aquatic habitat. but may be as far as 1,500 feet from water (Holland 1994; Jennings and Hayes 1994).

Occurrence in the Project Vicinity

Western pond turtle is known to occur in the Project vicinity and there are 17 occurrences within 10 miles of the Project site (Figure 4.4-2). The nearest record, recorded in 2016, is located approximately 1.5 miles southwest of the Project site, recorded in 2016 (CDFW 2024a). This occurrence documented one adult and one subadult western pond turtle in a flood control channel that was partly concrete and riprapped-lined and partly grass-lined.

Habitat Suitability

The majority of the aquatic features onsite provide marginal habitat for western pond turtle; however, Gibson Canyon Creek may provide suitable habitat for this species when water is present. The agricultural and developed areas of the Project vicinity do not provide suitable upland habitat for western pond turtles, although the annual grasslands occurring near the PG&E Vaca-Dixon Substation may provide dispersal and nesting habitat for western pond turtle.

Potential for Adverse Effects

During construction, the Project will avoid all impacts to Gibson Canyon Creek and the aquatic features identified during the aquatic resource delineation. Similarly, during operations and maintenance, no impacts to aquatic features are anticipated. Project construction will occur on agricultural areas (i.e., fallow farmlands and orchards). These areas are not considered suitable habitat and this species is unlikely to occur in those areas and, with the implementation of the PD Measures (**PD BIO-1**) outlined in Section 4.4.5, the impacts to this species would be considered less than significant.

Grasshopper Sparrow

Species Description

The grasshopper sparrow is a CDFW SSC and is also protected by the Migratory Bird Treaty Act (MBTA). Grasshopper sparrows in California occur west of the Sierra Nevada and are primarily summer residents, from Mendocino, Tehama, and Trinity Counties in the north, to western Riverside and San Diego Counties in the south (Shuford and Gardali 2008). Throughout their range, grasshopper sparrows occupy sites with moderately open grasslands containing patches of bare ground and that

do not form contiguous thickets of shrubs (Shuford and Gardali 2008). Grasshopper sparrows prefer territories with some bare ground but rarely occupy sites with greater than 35 percent bare ground. These sparrows forage primarily on the ground or from low vegetation. This species nests on the ground, often at the base of grass clumps (Shuford and Gardali 2008).

Occurrence in the Project Vicinity

There are two CNDDB occurrences of grasshopper sparrow within 10 miles of the Project site, with the closest occurrence located approximately 5.5 miles southeast of the Project site (Figure 4.4-2; CDFW 2024a).

Habitat Suitability

Grasslands and agricultural lands surrounding the Project vicinity may provide marginally suitable habitat foraging or nesting habitats for this species.

Potential for Adverse Effects

The Project will result in up to 65.9 acres of disturbance resulting from construction of the 40.3-acre Project site, 19.4-acre gen-tie corridor, and 7.2-acre gen-tie laydown area. The 40.3-acre Project site will result in 15.9 acres of permanent impacts and 28.4 acres of temporary impacts to fallow farmlands that provide potential foraging and nesting habitat for grasshopper sparrows. The temporarily disturbed areas, which include laydown yards and non-permanent structures, will be revegetated and restored to functional habitat following construction. Impacts to potential foraging and nesting habitat for the grasshopper sparrow that could occur as a result of the Project are minor because of the limited impact areas and relative abundance of suitable habitat in the Project vicinity.

Construction within the gen-tie corridor and gen-tie laydown area will result in the permanent removal of 21.6 acres of orchards and minor impacts to developed and disturbed areas adjacent to the PG&E Vaca-Dixon Substation, which are not considered suitable habitat for the grasshopper sparrow. Following the permanent removal of the orchards, this area may be used as foraging and potentially nesting habitat for grasshopper sparrows should they occur in the vicinity of the Project area.

Construction activities such as excavation, grading, or stockpiling of soil may deter individuals from foraging in the immediate vicinity of the Project area but is not anticipated to result in additional impacts with the implementation of the proposed PD Measures outlined in Section 4.4.5.

During the operation and maintenance phase of the Project, access to the facility will occur via the improved-surface roads and is expected to be minimal and infrequent. Similarly, access to the gen-tie corridor will be infrequent. If this species forages within the Project area during the operational phase of the Project, it is unlikely that adverse impacts will occur resulting from the infrequent site visits because the maintenance activities are not expected to substantially exceed the baseline activity or disturbance level of the area. Thus, no impacts to this species are anticipated during the operations and maintenance phase of the Project.

With the implementation of the proposed PD Measures (**PD BIO-1** through **PD BIO-3**) outlined in Section 4.4.5, the restoration of temporarily disturbed areas, and the net increase in potential

foraging and nesting habitat as a result of Project construction, the Project is anticipated to have a less than significant impact on the grasshopper sparrow.

Burrowing Owl

Species Description

The burrowing owl is a state candidate species and is protected under the MBTA. The burrowing owl is found throughout California, and uses a variety of habitat types characterized by low growing vegetation and the presence of mammal burrows or burrow-like structures. Burrowing owls occur in grasslands, deserts, prairies, and shrubland environments, but are also known to persist in some landscapes that are highly altered by human activity such as agricultural fields, roadsides, airports, golf courses, rural parks, and ruderal grassy fields (Haug et al. 1993; Rosenberg and Haley 2004). Burrowing owls' nest and roost in burrows commonly dug by ground squirrels and other small burrowing mammals or burrow-like structures such as culverts, piles of rubble, and pipes (Trulio 1997; Ronan 2002). In California, breeding burrowing owls are predominantly nonmigratory. Winter immigration of burrowing owls into California occur from the northern portion of the range in Canada and the United States, but these owls generally depart before the breeding season (Trulio et al. 2024).

Occurrence in the Project Vicinity

Solano County is within the range of burrowing owls and in a survey conducted during 2006-2007 during the breading season, over 80 pairs of burrowing owls were observed in the lowland areas of Solano County (Center for Biological Diversity 2024). Historical records from CNDDB indicate a total of 88 occurrences of burrowing owl within 10 miles of the Project site, with the nearest occurrence approximately 1 mile northeast of the Project site (CDFW 2024a).

Burrowing owl nest surveys were conducted between May 23, 2024, and July 10, 2024, in accordance with the California Department of Fish and Game *Staff Report on Burrowing Owl Mitigation* (2012). The surveys did not document the presence of burrowing owl in the survey area; however, one burrowing owl was incidentally observed in 2023 during the Project's Swainson's hawk nest surveys approximately 0.5 mile northeast of the Project site.

Habitat Suitability

The Project site and surroundings provide suitable foraging habitat for burrowing owl. During the burrowing owl nest surveys, biologists also noted unique features such as mounded banks of agricultural ditches, California ground squirrel burrows, and piles of discarded concrete pipes within the Project site which may provide suitable nesting or overwintering habitat for burrowing owl. Although no burrowing owls were observed during surveys in 2024, based on the presence of suitable nesting and forging habitat, and known occupancy in the region surrounding the Project, burrowing owl are considered to have a moderate potential to occur in the Project disturbance area in the future.

Potential for Adverse Effects

During construction, activities such as vegetation removal, grading, or excavations will alter potentially suitable habitat for burrowing owl resulting in decreased foraging or nesting habitat. The potential for direct impacts to individual burrowing owls is low given their highly mobile nature and

the PD Measures that have been implemented into the design of the Project. These PD Measures include preconstruction surveys and implementation of a mitigation plan if burrowing owls are detected during preconstruction surveys. If individual owls are detected, no-work buffers will be implemented to protect burrowing owls or their nest sites. Indirect impacts such as construction noise or lighting may result in behavior impacts that deter burrowing owls from the Project vicinity.

The Project will result in up to 65.9 acres of disturbance resulting from construction of the 40.3-acre Project site, 19.4-acre gen-tie corridor, and 7.2-acre gen-tie laydown area. The 40.3-acre Project site will experience 15.9 acres of permanent impacts and 28.4 acres of temporary impacts. Permanent impacts will result from construction of the BESS array, Project substation, access and maintenance roads, perimeter fences, the sound barrier, and the stormwater ponds. Temporary impacts will occur as a result of the construction laydown areas and access areas which will not be converted into permanent structures. These temporary impacts areas will be restored and revegetated following construction completion.

In addition to the 40.3-acre Project site, construction within the gen-tie corridor and gen-tie laydown area will result in the permanent removal of 21.6 acres of orchards and minor impacts to developed and disturbed areas. Following construction, the permanent removed orchards will be available for use by a variety of species, including burrowing owl, resulting in a net benefit and additional 5.7 acres of habitat that may be used by burrowing owls should they occur in the Project vicinity in the future.

The Project would have the potential for adverse impacts on burrowing owl foraging or nesting habitat during Project construction; however, with implementation of proposed PD Measures (**PD BIO-1** through **PD BIO-3** and **PD BIO-5**) outlined in Section 4.4.5, which include preconstruction burrowing owl surveys and avoidance, if necessary, the impacts will be limited to potentially suitable habitat rather than individuals and will be reduced to less than significant.

Furthermore, the Applicant has developed an Agricultural Mitigation Plan (Appendix 4.2-A) that has been incorporated as PD Measure **PD AG-01** to reduce impacts associated with conversion of farmland. Per **PD AG-01**, the Applicant will secure at least 60.5 acres of agricultural mitigation lands within Solano County in coordination with Solano Land Trust, as required by Solano County General Plan policies. While these mitigation lands will be preserved primarily for agricultural preservation, these lands will secondarily benefit burrowing owl foraging habitat and may provide nesting opportunities on the unused edges of the agricultural fields.

Golden Eagle

Species Description

The golden eagle is a Fully Protected species in California and is on the CDFW Watch List. The golden eagle is also protected by the MBTA, the Bald and Golden Eagle Protection Act (BGEPA), and several sections of the California Fish and Game Code. They are a year-round resident throughout much of California. They typically occur in rolling foothills, mountain areas, sage-juniper flats, and deserts (Zeiner et al. 1990a). Golden eagles can be found in a variety of habitats including forests, canyons, shrublands, grasslands, and oak woodlands. In California, golden eagles typically nest on steep cliffs, in large trees, and steep escarpments in grasslands, chaparral, shrublands, forest, and other vegetated areas (Grinnell and Miller 1944). Golden eagles have also been known to nest on electrical

transmission towers traversing grasslands (Hunt et al. 1999). Golden eagles forage in open grassland habitats (Kochert et al. 2002). Preferred territory sites include those that have a favorable nest site, a dependable food supply (small- to medium-sized mammals, including ground squirrels and birds), and broad expanses of open country for foraging. Hilly or mountainous country where takeoff and soaring are supported by updrafts is generally preferred to flat habitats (Johnsgard 1990).

Occurrence in the Project Vicinity

Golden eagle is known to occur in regions of Solano County. The CNNDB has 10 recorded occurrences of this species within Solano County, all located within the southern portion of the county (CDFW 2024a). There are no CNDDB recorded occurrences within 10 miles of the Project site.

Habitat Suitability

The annual grassland habitat and fallow farmlands within the Project vicinity may support small mammal prey and provide minimal foraging habitat for golden eagle. The Project disturbance areas lack preferred nesting habitats such as steep cliffs and large trees, but transmission towers present in the Project vicinity may function as a nesting location. However, it is unlikely that this species will nest in these towers due to the proximity of numerous disturbances such as I-80 and nearby towns and residences. Due to the minimal habitat present in the vicinity, there is a low likelihood of this species to occur, and any potential occurrence is anticipated to be limited to rare flyovers.

Potential for Adverse Effects

During construction, the Project will result in 40.3 acres of disturbance to the Project site, which includes 15.9 acres of permanent impacts and 28.4 acres of temporary impacts that may provide potential foraging habitat for the golden eagle. Impacts to potential foraging habitat for golden eagles are minor because of the limited impact areas and the low-quality habitat present at the Project site. Furthermore, the preferred nesting habitat for this species is absent from the Project disturbance area so potential impacts to nest sites should be considered very low. Removal of the 21.6 acres of orchards within the gen-tie corridor and gen-tie laydown area will also increase the potential foraging grounds for this species, should they occur in the vicinity.

During the operation and maintenance phase of the Project, access to the facility will be minimal and infrequent. If golden eagles forage within the Project area during the operation phase of the Project, the maintenance activities are not expected to substantially exceed the baseline activity level of the area and no additional impacts are anticipated.

With the implementation of the proposed PD Measures (**PD BIO-1** through **PD BIO-3**) outlined in Section 4.4.5, the restoration of temporarily disturbed areas, and the net increase in potential foraging habitat as a result of Project construction, the Project is anticipated to have a less than significant impact on golden eagles.

Swainson's Hawk

The Applicant is proposing PD Measures to ensure that take, as defined by the California Fish and Game Code, of Swainson's hawk will not occur as a result of Project activities. Under the California Fish and Game Code, "take" means to hunt, pursue, catch, capture or kill, or attempt to hunt, pursue,

catch, capture or kill (California Fish and Game Code Section 86). As such, the Applicant is not requesting an Incidental Take Permit (ITP) for Swainson's hawk, as take of this species will not occur with implementation of the PD Measures, as described below. However, to ensure CEC data adequacy requirements are fulfilled, the Applicant is providing all of the necessary information for an ITP application for Swainson's hawk as identified in Table 4.4-5.

Table 4.4-5. Location of ITP Application Information

ITP Application Requirements	Opt-in Application Section
Common and scientific names of the species to be covered by the permit and the species' status under CESA	Please refer to Section 4.4.3.6 under *Swainson's Hawk: Species Description*
Complete description of the project or activity for which the permit is sought	Please refer to Section 2, *Project Description*
Location where the project or activity is to occur or to be conducted	Please refer to Section 2, *Project Description*
Analysis of whether and to what extent the project or activity for which the permit is sought could result in the taking of species to be covered by the permit	Please refer to Section 4.4.3.6 under *Swainson's Hawk: Potential for Adverse Effects*
Analysis of the impacts of the proposed taking on the species	Please refer to Section 4.4.3.6 under *Swainson's Hawk: Potential for Adverse Effects*
Analysis of whether issuance of the incidental take permit would jeopardize the continued existence of a species	Please refer to Section 4.4.3.6 under *Swainson's Hawk: Potential for Adverse Effects*
Proposed measures to minimize and fully mitigate the impacts of the proposed taking	Please refer to Section 4.4.3.6 under *Swainson's Hawk: Potential for Adverse Effects* and Section 4.4.5.1, *Species-specific Avoidance, Minimization, and Mitigation Measures*
Proposed plan to monitor compliance with the minimization and mitigation measures and the effectiveness of the measures	Please refer to Section 4.4.3.6 under *Swainson's Hawk: Potential for Adverse Effects* and Section 4.4.5.1, *Species-specific Avoidance, Minimization, and Mitigation Measures*
Description of the funding source and the level of funding available for implementation of the minimization and mitigation measures	Please refer to Section 4.4.3.6 under *Swainson's Hawk*

While the Applicant is not requesting an ITP for Swainson's hawk, to meet CEC data adequacy and ITP Application requirements, the Applicant has financial assets to implement the terms of an ITP, should one be required. In addition, the Applicant would provide financial assurances to guarantee that an adequate level of funding is available to implement all aspects of the Project. Should an ITP be required, the Applicant will provide financial assurance to CDFW in the form of an irrevocable letter of credit, a pledged savings account, or another form of security approved by CDFW before Project activities commence.

Species Description

Swainson's hawk is a state listed threatened species, which is also protected under the MBTA, that occurs in grasslands, shrublands, deserts, and agricultural regions in western North America. Swainson's hawks are open-country hunters and require large open landscapes for foraging. Swainson's hawks forage in grasslands, pastures, and croplands that support a suitable prey population. Swainson's hawks' nest in solitary trees or small groves of trees within close proximity to where they forage. Nests are typically found in riparian habitats or in large native trees such as valley oak (*Quercus lobata*), cottonwood (*Populus fremontii*), walnut (*Juglans californica*), and willow (*Salix* sp.) and nonnative trees such a eucalyptus (*Eucalyptus* sp.) or ornamental pine trees. Nest trees are

often reused year after year. Most Swainson's hawks winter in South America, although some winter in the United States. They arrive in California in early March to establish nesting territories and nest in large trees (CDFG 1994).

Occurrence in the Project Vicinity

Swainson's hawk occurs through much of California's Central Valley, with the highest nesting densities occurring in Solano, Yolo, Sacramento, and San Joaquin Counties (Battistone et al. 2019). There are 200 CNDDB recorded occurrences of Swainson's hawk within 10 miles of the Project site (CDFW 2024a).

Swainson's hawk nest surveys were conducted between March 16, 2023, and June 29, 2023, following the recommendations outlined in the *Recommended Timing and Methodology for Swainson's hawk Nesting Surveys in California's Central Valley* (Swainson's Hawk Technical Advisory Committee 2000). During the survey, two Swainson's hawk pairs were observed with active nests within 0.5 mile of the Project site or gen-tie corridor. One nest was located on the west side of the I-80 southbound onramp from N. Meridian Road and west of the PG&E Vaca-Dixon Substation. The second nest was on the east side of N. Meridian Road northwest of the substation. Additionally, nesting behavior was observed by a third Swainson's hawk pair located in a eucalyptus tree on the west side of Byrnes Road approximately 0.7 mile south of the Project site. During the 2024 burrowing owl surveys, the nest on the west side of the I-80 southbound onramp from N. Meridian Road was occupied by a Swainson's hawk pair.

Habitat Suitability

The agricultural lands within and surrounding the Project site provide suitable foraging habitat for Swainson's hawks. In addition, numerous large, scattered trees and utility towers within the Project vicinity provide suitable nesting habitat. Based on the presence of suitable foraging and nesting habitat and known occupancy in the vicinity of the Project site, Swainson's hawks are considered present within the Project vicinity. In addition, Swainson's hawk pairs often reuse existing nests. There is a high likelihood of Swainson's hawk presence in the Project vicinity in the future.

Potential for Adverse Effects

During construction, activities such as vegetation removal, grading, or excavations could alter potentially suitable foraging habitat for Swainson's hawk. The Project is anticipated to result in up to 65.9 acres of disturbance resulting from construction of the 40.3-acre Project site, 19.4-acre gen-tie corridor, and 7.2-acre gen-tie laydown area. Permanent impacts to the 40.3-acre Project site will result from construction of the BESS array, Project substation, access and maintenance roads, perimeter fences, the sound barrier, and the stormwater ponds and total approximately 15.9 acres. Temporary impacts to the 40.3-acre Project site will occur as a result of the construction laydown areas and access areas, which will not be converted into permanent structures, and total approximately 28.4 acres (Figure 4.4-3). These temporary impacts areas will be restored and revegetated following construction completion and will be accessible for Swainson's hawk use including foraging.

NextEra Energy
Corby Battery Energy Storage System Project

Figure 4.4-3
Impacts to Swainson's Hawk Foraging Habitat

Solano County, CA

Proposed Features

Permanent Impacts

- Stormwater Pond (2.1 acres)
- Project Substation (2.1 acres)
- BESS Area (11.4 acres)
- Access Road (0.3 acres)

Orchard Removal Area

- Gen-tie Corridor (14.5 acres)
- Gen-tie Laydown Area (7.2 acres)

Temporary Impacts

- Construction Laydown Area (13.3 acres)
- Other Temporary Impacts (15.0 acres)

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:6,500 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Construction within the 19.4-acre gen-tie corridor and 7.2-acre gen-tie laydown area will result in the permanent removal of 21.6 acres of orchards and minor impacts to developed and disturbed areas adjacent to the PG&E Vaca-Dixon Substation. The removal of 21.6 acres of orchards and subsequent restoration of the gen-tie corridor and gen-tie laydown area will convert unsuitable orchard habitat to suitable foraging habitat for Swainson's hawk. While construction within the 40.3-acre Project site will permanently remove 15.9 acres of foraging habitat, removal of the orchard lands will open up 21.6 acres of new foraging habitat for Swainson's hawk. This will result in a net benefit and additional 5.7 acres of foraging habitat that may be used by Swainson's hawk following construction completion (Figure 4.4-3).

Direct impacts to Swainson's hawk include reduction or loss of foraging habitat as a result of vegetation removal or construction activities. However, while availability of potential foraging habitat will be temporarily reduced or lost during construction, there is an abundance of suitable foraging habitat surrounding the Project site. Development within the Project disturbance area may also result in indirect impacts to foraging Swainson's hawk and may result in the potential destruction of small mammal burrows and could result in changes to prey quality or quantity. The Project will not result in take of individuals because the species is highly mobile and could easily avoid the active construction areas while foraging.

Large trees that could potentially provide nesting habitats for Swainson's hawk are located within 0.5 miles of the Project disturbance area; therefore, the Project has the potential to result in direct or indirect impacts on breeding Swainson's hawks, their nests, young, or eggs if new unidentified nests are established prior to construction activities. Construction-related impacts, such as increased human presence, or construction-related noise and vibrations could result in disturbances to adults and result in insufficient nest attendance. However, the Applicant is incorporating PD Measure **PD BIO-6**, which includes conducting pre-construction surveys for Swainson's hawk during the nesting season and implementing no-work buffers, to the maximum extent feasible, if an active Swainson's hawk nest is found within 0.25 mile of construction activities. With implementation of this PD Measure, take of individual Swainson's hawk, or their nests, young, or eggs, will be avoided.

During the operations and maintenance phase of the Project, access to the facility will be minimal and infrequent. If Swainson's hawk forage or nest within the Project area during the operation phase of the Project, the maintenance activities are not expected to substantially exceed the baseline activity level of the area, and no additional impacts are anticipated.

Following construction completion, the Applicant will restore all temporarily impacted areas. The removal of an orchard will result in a net benefit to Swainson's hawk as it will open up an additional 5.7 acres of foraging habitat. In addition, the Applicant has developed an Agricultural Mitigation Plan (Appendix 4.2-A) that has been incorporated as PD Measure **PD AG-01** to reduce impacts associated with conversion of farmland. Per **PD AG-01**, the Applicant will secure at least 60.5 acres of agricultural mitigation lands within Solano County in coordination with Solano Land Trust, as required by Solano County General Plan policies. While these mitigation lands will be preserved primarily for agricultural preservation, these lands will be protected in a manner with which the Project site is not protected, and will also serve as superior foraging habitat preservation for the Swainson's hawk. Preservation of the agricultural lands would equate to a 1:3.8 ratio of permanent Project impacts to lands being

preserved. As such, the Applicant is not proposing separate additional compensatory mitigation for impacts to Swainson's hawk foraging habitat.

While the Project vicinity may support Swainson's hawk during some parts of the year, with implementation of the Applicant-incorporated PD Measures, Project activities will not result in take of the species and will not jeopardize the continued existence of this species. While the availability of potential foraging and nesting habitat may be temporarily reduced or lost during construction, there is an abundance of suitable foraging and nesting habitat surrounding the Project vicinity. Based on interpretation of U.S. Department of Agriculture cropland data (USDA 2023), there is approximately 125,000 acres of suitable foraging habitat for the species within a 10-mile buffer of the Project site (see Figure 4.4-4). The permanent loss of 15.9 acres as a result of the Project represents approximately 0.013 percent of the available foraging habitat within 10 miles of the Project site. As such, removal of this foraging habitat is not anticipated to affect Swainson's hawk. In addition, following construction, temporarily impacted areas and the removed orchard will remain available for wildlife use and Swainson's hawk foraging. Prey species are expected to recolonize the Project site following construction, which could provide continued foraging opportunities for individual hawks. The temporary and minor loss of foraging habitat during construction will not impact the local population or the regional population, and permanent losses of suitable foraging habitat will be more than offset through the new foraging habitat that will be gained through the removal of the orchard. Therefore, Project activities are not anticipated to affect foraging for Swainson's hawk, result in take of individuals, or jeopardize the continued existence of the species.

The Project will have the potential for direct or indirect impacts on Swainson's hawk foraging lands, but will not directly impact individuals or the reproductive success of any active Swainson's hawk nest during Project construction. With implementation of proposed PD Measures (**PD BIO-1** through **PD BIO-3,** and **PD BIO-6**) outlined in Section 4.4.5, which include preconstruction Swainson's hawk surveys and avoidance, the restoration of temporarily disturbed areas, and the net increase in potential foraging habitat as a result of Project construction, the impacts to this species will be limited to potential foraging areas, will not result in take of individuals or their nests, and will be reduced to less than significant impacts.

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.4-4 Swainson's Hawk Foraging Habitat

Solano County, CA

Buffer (10-mile)

Proposed Features

Gen-tie (Overhead)

Gen-tie (Underground; Option 1)

Gen-tie (Underground; Option 2)

Project Site

PG&E Features

Gen-tie (Overhead; PG&E)

Foraging Habitat

Unsuitable

Suitable

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:140,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 5 10 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Northern Harrier

Species Description

The northern harrier is a California SSC and is protected under the MBTA. This species breeds and forages in a variety of open habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered perches, such as shrubs or fence posts. These habitats may include freshwater marshes, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, grasslands, weed fields, pastures, and some croplands. Harriers nest on the ground, mostly within patches of dense, often tall, vegetation in undisturbed areas (MacWhirter and Bildstein 1996).

Occurrence in the Project Vicinity

The Project vicinity is within the breeding and yearlong occurrence range of northern harriers (Shuford and Gardali 2008). There are two CNDDB occurrences of northern harriers within 10-miles of the Project site, with the nearest occurrence approximately 4.5 miles south of the Project site (CDFW 2024a).

Habitat Suitability

The annual grasslands and fallow and cultivated agricultural fields in the vicinity of the Project site provide suitable foraging habitat. Due to the regular maintenance of agricultural fields, nesting habitat in the vicinity of the Project site is limited.

Potential for Adverse Effects

During construction, the Project will permanently impact 15.9 acres resulting from construction of the BESS array, Project substation, access and maintenance roads, perimeter fences, and the sound barrier. The Project will also result in 28.4 acres of temporarily impacted areas that include laydown yards and non-permanent structures, which following construction will be revegetated and restored to functional use. Impacts to potential foraging habitat that could occur as a result of the Project are minor because of the limited impact areas and relative abundance of suitable foraging habitat in the Project vicinity.

Furthermore, the gen-tie corridor and gen-tie laydown area will result in permanent removal of 21.6 acres of orchard land cover and also impact developed and disturbed areas in the vicinity of the PG&E substation. Orchards are generally unsuitable foraging grounds for northern harriers but following the permanent removal and restoration of this 21.6 acres, this area may be used as foraging habitat, resulting in a net increase in foraging habitat as a result of the Project.

Construction activities such as excavation, grading, or stockpiling of soil may deter individuals from foraging in the immediate vicinity of the Project disturbance area but is not anticipated to result in additional impacts with the implementation of the proposed PD Measures outlined in Section 4.4.5.

During the operation and maintenance phase of the Project, access to the facility will occur via the improved surface roads and is expected to be minimal and infrequent. If northern harrier forage within the Project vicinity during the operation phase of the Project, it is unlikely that adverse impacts will occur resulting from the infrequent site visits because the maintenance activities are not expected

to substantially exceed the baseline disturbance level of the area. Thus, no impacts to this species are anticipated during the operations and maintenance phase of the Project.

With the implementation of the proposed PD Measures (**PD BIO-1** through **PD BIO-3**) outlined in Section 4.4.5, the restoration of temporarily disturbed areas, and the net increase in potential foraging habitat as a result of Project construction, the Project is anticipated to have a less than significant impact on northern harriers.

Furthermore, the Applicant has developed an Agricultural Mitigation Plan (Appendix 4.2-A) that has been incorporated as PD Measure **PD AG-01** to reduce impacts associated with conversion of farmland. Per **PD AG-01**, the Applicant will secure at least 60.5 acres of agricultural mitigation lands within Solano County in coordination with Solano Land Trust, as required by Solano County General Plan policies. While these mitigation lands will be preserved primarily for agricultural preservation, these lands will also serve as foraging habitat preservation to numerous special status species, including the northern harrier.

White-tailed Kite

Species Description

The white-tailed kite is a California Fully Protected species and is also protected by the MBTA. Kites inhabit savannas, open woodlands, marshes, desert grasslands, partially cleared lands, and cultivated fields and tend to avoid heavily grazed areas (Cornell Lab of Ornithology 2024). This species forages in grasslands, marshes, riparian edges, and cultivated fields where prey species (mainly small mammals) are relatively abundant (Kaufman 1996). White-tailed kites typically nest on the tops of trees close to good foraging locations.

Occurrence in the Project Vicinity

White-tailed kites are considered a relatively common yearlong resident in the California inland valleys and coastal areas and often associated with open grasslands and farmlands that provide foraging habitat. During the 2023 Swainson's hawk nest surveys, white-tailed kites were observed foraging and perching within 0.5 mile of the Project disturbance area. Additionally, the CNDDB noted five occurrences within 10 miles of the Project site, with the closest occurrence approximately 0.9 mile to the southwest (CDFW 2024a).

Habitat Suitability

The annual grasslands and fallow and cultivated agricultural fields in the vicinity of the Project site provide suitable foraging habitat. Perch points such as transmission towers are also located within the Project corridor and may be used during foraging events. The non-native forest patches and roadside trees in the vicinity of the Project site provide suitable nesting habitat for this species. Based on the known presence of white-tailed kites and suitable foraging and nesting habitats there is a high potential for these species to occur in the Project vicinity.

Potential for Adverse Effects

During construction, activities such as vegetation removal, grading, or excavations could alter potentially suitable foraging habitat for white-tailed kites. The Project will result in up to 65.9 acres of

disturbance resulting from construction of the Project site, clearance of the gen-tie corridor, and use of the gen-tie laydown area. The 40.3-acre Project site will result in 15.9 acres of permanent impacts and 28.4 acres of temporary impacts. These temporary impacts areas will be restored, revegetated, and may be used for foraging following construction completion. While availability of potential foraging habitat would be reduced or lost during construction, there is an abundance of suitable foraging habitat surrounding the Project site which may be utilized by white-tailed kites during and after construction. Additionally, the gen-tie corridor and gen-tie laydown area will permanently remove 21.6 acres of orchard lands that, following construction, will be available as foraging habitat for white-tailed kites, resulting in an additional 5.7 acres of foraging habitat.

Large trees that could potentially provide nesting habitats for white-tailed kites are located within the vicinity of the Project site. If project construction activities occur during their nesting season and this species is nesting adjacent to the Project disturbance area at the time of construction, there may be direct or indirect impacts to their nests, young, or eggs.

The Project would have the potential for adverse impacts on white-tailed kite foraging or nesting habitat during Project construction; however, with implementation of the proposed PD Measures (**PD BIO-1** through **PD BIO-3**) outlined in Section 4.4.5, the restoration of temporarily disturbed areas, and the net increase in potential foraging habitat as a result of Project construction, the Project is anticipated to have a less than significant impact white-tailed kites.

Furthermore, the Applicant has developed an Agricultural Mitigation Plan (Appendix 4.2-A) that has been incorporated as PD Measure **PD AG-01** to reduce impacts associated with conversion of farmland. Per **PD AG-01**, the Applicant will secure at least 60.5 acres of agricultural mitigation lands within Solano County in coordination with Solano Land Trust, as required by Solano County General Plan policies. While these mitigation lands will be preserved primarily for agricultural preservation, these lands will also serve as foraging habitat preservation to numerous special status species, including white-tailed kites.

Bald Eagle

Species Description

Bald eagle is state listed as endangered and is protected under the MBTA, BGEPA, and several sections of the California Fish and Game Code. Bald eagle is a permanent resident and uncommon winter migrant in California (Zeiner et al. 1990a). Breeding areas include coasts, rivers, lakes, reservoirs, and cliffs. Wintering bald eagles are associated with open water for foraging. They nest in mature trees that are somewhat close (within 1.25 miles) to water with suitable foraging habitat. Although nests can be closer, the average distance between bald eagle nests and human development is typically more than 1,640 feet (500 meters) (Buehler 2000).

Occurrence in the Project Vicinity

There is one CNNDB recorded occurrence of bald eagles within 10 miles of the Project site, located approximately 9.25 miles southwest. One to two adults, and occasional juvenile, bald eagles have been documented at this occurrence from 2008 through 2018 (CDFW 2024a).

Habitat Suitability

The Project vicinity has low potential for bald eagle presence. Preferred open water foraging grounds and nesting locations are not present within the Project vicinity. The annual grasslands present in the Project vicinity provide low quality foraging habitat. Potential presence of bald eagle is anticipated to be limited to rare flyovers.

Potential for Adverse Effects

During construction, the Project will result in 40.3 acres of disturbance to the Project site, which includes 15.9 acres of permanent impacts and 28.4 acres of temporary impacts that may provide potential foraging habitat for the bald eagle. In addition, the gen-tie corridor and gen-tie laydown area will result in the removal of the 21.6-acres of orchards, which may increase the potential foraging grounds for this species, should they occur in the vicinity. Impacts to potential foraging habitat for the bald eagles are minor because of the limited impact areas and the low-quality habitat present at the Project site. Furthermore, the preferred nesting habitat for this species is absent from the Project vicinity so potential impacts to nest sites should be considered very low.

During the operation and maintenance phase of the Project, access to the facility will be minimal and infrequent. If bald eagles forage within the Project vicinity during the operation phase of the Project, the maintenance activities are not expected to substantially exceed the baseline activity level of the area and no additional impacts are anticipated.

With the implementation of the proposed PD Measures (**PD BIO-1** through **PD BIO-3**) outlined in Section 4.4.5, the restoration of temporarily disturbed areas, and the net increase in potential foraging habitat as a result of Project construction, the Project is anticipated to have a less than significant impact on bald eagles.

Western Red Bat

Species Description

The western red bat is a CDFW SSC and is locally common in some areas of California, occurring from Shasta County to the Mexican border. Western red bats are usually solitary species and prefer habitat mosaics that have trees for roosting and open areas for foraging. Roosting occurs primarily in the foliage of large trees and less often in shrubs and is often located in edge habitats adjacent to streams, fields, or urban areas. The preferred roost sites are protected from above but open below. Foraging habitat occurs in a wide variety of habitats including grasslands, shrublands, open woodlands and forests, and croplands (Zeiner et al. 1990b).

Occurrence in the Project Vicinity

There is one CNDDB occurrence within 10 miles of the Project site, located approximately 9 miles northwest of the Project site, from 2013 (CDFW 2024a).

Habitat Suitability

There is a low potential for this species to occur in the vicinity of the Project site. The orchards and surrounding trees may provide suitable roosting habitat and the open croplands and grasslands may provide suitable foraging habitat for this species.

Potential for Adverse Effects

The Project will result in up to 65.9 acres of disturbance resulting from construction of the 40.3-acre Project site, 19.4-acre gen-tie corridor, and 7.2-acre gen-tie laydown area, which may provide low-quality habitat foraging and roosting habitat for the western red bat. During construction, the Project will result in 40.3 acres of disturbance to the Project site, which includes 15.9 acres of permanent impacts and 28.4 acres of temporary impacts that may provide potential foraging habitat for the western red bat. In addition to the 40.3-acre Project site, construction within the gen-tie corridor and laydown area will result in the permanent removal of 21.6 acres of orchards and minor impacts to developed and disturbed areas. The removal of the 21.6 acres of orchards may result in a loss of potential roosting habitat for this species, should they occur in the Project vicinity.

During the operation and maintenance phase of the Project, the facility noise or lighting may disrupt the baseline activity and cause behavior changes to foraging or roosting bats but is not expected to result in direct mortality to this species. With the implementation of the proposed PD Measures (**PD BIO-1**) outlined in Section 4.4.5 and the restoration of temporarily disturbed areas the Project is anticipated to have a less than significant impact on western red bats.

The Applicant has developed an Agricultural Mitigation Plan (Appendix 4.2-A) that has been incorporated as PD Measure **PD AG-01** to reduce impacts associated with conversion of farmland. Per **PD AG-01**, the Applicant will secure at least 60.5 acres of agricultural mitigation lands within Solano County, as required by Solano County General Plan policies. While these mitigation lands will be preserved primarily for agricultural preservation, these lands will also serve as potential foraging habitat for western red bats.

Migratory Birds and Raptors

Non-special status migratory birds and raptors protected by the MBTA and California Fish and Game Code have the potential to nest and forage in the Project vicinity. Although limited, trees and shrubs in the Project vicinity including orchards and non-native forest provide suitable habitat for tree- and shrub-nesting birds such as yellow-billed magpie (*Pica nuttalli*) and loggerhead shrike (*Lanius ludovicianus*). Gravel roads in the Project vicinity may be used for nesting by killdeer (*Charadrius vociferus*). Electrical towers in the Project vicinity also provide suitable nesting habitat for raptors such as red-tailed hawks and some other birds such as common raven (*Corvus corax*). The breeding season for migratory birds varies by species but generally extends from February through August. Implementation of the avoidance, minimization, and/or PD Measures outlined in Section 4.4.5 (**PD BIO-1** through **PD BIO-3**) will avoid loss of individuals, eggs, or nests, and the restoration of temporarily disturbed areas will reduce impacts to less than significant.

4.4.3.7 Impacts to Riparian Habitat or Sensitive Natural Communities[14]

Four sensitive natural communities for a total 12 occurrences have been documented to occur within 10-mile Project disturbance area (CDFW 2024b). Sensitive Natural Communities include Coastal and Valley Freshwater Marsh (1 occurrence), Coastal Brackish Marsh (3 occurrences), Valley Needlegrass Grassland (4 occurrences), and Northern Claypan Vernal Pool (4 occurrences). No occurrences of

[14] Appendix B (g) (13) (C) (i)

natural communities have been reported from the Allendale 7.5-minute USGS quadrangle where the Project is located. The nearest sensitive plant community is Valley Needlegrass Grassland community 6.5 miles south of the Project site within the Jepson Grasslands managed by the Solano Lands Trust. Based on field surveys, aerial imagery, and historical occurrences, no sensitive natural communities or riparian habitat are present within or 1 mile from the Project site. Thus, the Project will have no impact on riparian or sensitive natural communities.

4.4.3.8 Jurisdictional Waters and Wetlands

A total of 4 aquatic resource types and 17 individual aquatic features were mapped within the Project disturbance area and an associated 250-foot buffer (Table 4.4-2; Appendix A of Appendix 4.4-D). Preliminary jurisdictional determinations of the onsite aquatic resources are included below. No jurisdictional area will be impacted during Project construction or operations.

U.S. Army Corps of Engineers

All mapped ditches appear to be excavated in uplands, are not realigned natural features, and are subject to maintenance. Some of these ditches also receive pumped water for irrigation purposes. These features would therefore likely not be considered jurisdictional under Section 404 of the Clean Water Act (CWA).

The mapped basin appears to be excavated in uplands and isolated and would therefore likely not be considered jurisdictional under Section 404 of the CWA. Similarly, the mapped seasonal wetlands are also isolated from other aquatic features and would therefore likely not be considered jurisdictional under Section 404 of the CWA.

Lastly, the mapped intermittent riverine feature, consisting of a reach of Gibson Canyon Creek, appears to eventually drain into Cache Slough, a tidal body of water. It is therefore likely the mapped intermittent riverine feature would be considered jurisdictional under Section 404 of the CWA.

State Water Resource Control Board/Regional Water Quality Control Board

The State Water Resource Control Board (SWRCB) would regulate the intermittent riverine feature under Section 401 of the CWA because it would be under U.S. Army Corps of Engineers (USACE) jurisdiction pursuant to Section 404 of the CWA. SWRCB would not regulate ditches, basins, or seasonal wetlands under Section 401 of the CWA because the waters/wetlands would not be under USACE jurisdiction pursuant to Section 404 of the CWA.

The ditches and basins identified would be under the jurisdiction of the SWRCB pursuant to the Porter-Cologne Act and definition of a water of the State because they are “surface waters” within the State. These features meet the criteria to be considered waters of the State.

The seasonal wetlands delineated in the study area: (1) have continuous or recurrent saturation of the upper substrate caused by groundwater, or shallow surface water, or both; (2) the duration of such saturation is sufficient to cause anaerobic conditions in the upper substrate; and (3) the area’s vegetation is dominated by hydrophytes, or the area lacks vegetation. Therefore, the seasonal wetlands meet the State wetland criteria on this basis.

California Department of Fish and Wildlife

CDFW regulates activities that substantially affect the bed and bank of a stream, lake, or river. The mapped intermittent riverine features would therefore likely be regulated by CDFW under Section 1600 et. seq. of the Fish and Game Code. The mapped seasonal wetlands and basins likely would not be regulated under CDFW since they are not streams, lakes, or rivers. The mapped ditches could be regulated by CDFW if they are channelizing a stream or have an upstream or downstream connection to other waters. The mapped ditch features that do have a connection with a stream are D-2, D-10, D-11, D-12, and D-16, and therefore, these features could be regulated by CDFW. The remainder of the mapped ditches do not have a surface connection with a stream and therefore would likely not be regulated by CDFW.

4.4.3.9 Wildlife Nurseries and Movement Corridors[15]

A functional network of connected wildlands is essential to continued support of California's diverse natural communities in the face of human development and climate change. Corridors along drainages, valleys, and other features facilitate wildlife movement and connectivity between areas of suitable habitat; the corridors (e.g., linkages) and associated habitats are essential to population viability.

Multiple conservation planning initiatives modeled wildlife connectivity and movement in the greater San Francisco Bay Area including Solano County, where the Project is located (CDFW 2024b; Penrod et al. 2001, 2013; Spencer et al. 2010). Models identified large areas of relatively natural habitat blocks that support native biodiversity and areas essential for ecological connectivity between them.

According to connectivity models, wildlife movement corridors and linkages that connect areas of suitable wildlife habitat are absent within the Project disturbance area. The Project vicinity is classified by CDFW's Terrestrial Connectivity Areas of Conservation Emphasis as having limited connectivity opportunity (Category 1) (CDFW 2024b). No big game migration data from CDFW suggests this area is an important linkage or corridor for big game species. The Project disturbance area is outside essential connectivity areas, natural landscape blocks and least cost corridors or linkages as modeled by the California Essential Habitat Connectivity Project and associated models (Spencer et al. 2010; Penrod et al. 2013). The highly modified landscape along the I-80 corridor includes fragmented habitat, transportation barriers, and anthropogenic disturbances that contribute to the low biological value for wildlife movement and habitat connectivity. Local wildlife may disperse through the Project site, but the Project will not create any substantial additional barriers to dispersal, Additionally, no evidence of the existence of a wildlife nursery site (e.g., rookeries for birds or maternal roosts for bats) were observed during field surveys. Thus, the Project is not anticipated to impact wildlife nurseries or movement corridors.

4.4.3.10 Local Policies

The Solano County General Plan (Solano County 2008) is a guide for land development and conservation in unincorporated portions of Solano County. Chapter 4, *Resources*, purpose is to identify goals, policies, and implementation measures to protect nature, cultural, and open resource

[15] Appendix (g) (13) (A) (viii)

spaces and focuses on conserving, preserving, and enhancing these resources. The general plan encourages the preservation of wetlands, protection of watersheds, conservation of riparian vegetation, preservation of special status species and their habitats, protecting wildlife movement corridors, and promoting energy conservation and renewable energy. The plan also identifies Priority Habitat Areas and Resource Conservation Areas, neither of which occur in the vicinity of the Project site. Loss of special status species and their habitat as a result of implementing the Project would conflict with these policies. However, implementation of avoidance, minimization, and/or PD Measures **PD BIO-1** through **PD BIO-7** and restoration of temporarily disturbed areas, impacts to local policies will be less than significant.

4.4.3.11 Habitat Conservation Plans/Natural Community Conservation Plans

The Solano Multi-Species Habitat Conservation Plan (Solano County Water Agency 2012) establishes a framework for complying with federal and state regulations for endangered species while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Habitat Conservation Plan participants within the plan area. Plan participants include various municipalities, and irrigation, water, sanitation, and reclamation districts. The Applicant and unincorporated areas of Solano County are not Plan participants and are not covered under the Habitat Conservation Plan. The plan area encompasses approximately 577,000 acre of Solano County and approximately 8,000 acres of Yolo County. Covered activities under the Habitat Conservation Plan are associated with urban development, ongoing operations, maintenance, and new construction of plan participant facilities, and management, enhancement, habitat restoration/construction, monitoring, and relocation of covered species. The Project site is located in a Covered Activity Zone that only allows ongoing operation, maintenance, and construction of irrigation and flood control facilities. Therefore, in addition to the Applicant not being a plan participant, the Project would also not be considered a covered activity under the Solano Multi-Species Habitat Conservation Plan. However, implementation of avoidance, minimization, and/or measures **PD BIO-1** through **PD BIO-7** and restoration of temporarily disturbed areas, impacts to local policies will be less than significant.

4.4.3.12 CEQA Impact Analysis

The following impact analysis includes an evaluation of the CEQA Environmental Checklist threshold criteria. For the purposes of this analysis, implementation of the proposed Project will cause a significant impact on biological resources if it resulted in any of the described adverse effects, interferences, or conflicts in the following text.

IMPACT 4.4-1: 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, U.S. Fish and Wildlife Service, or NOAA Fisheries? (Less than Significant Impact)

Impacts on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS are assessed in Sections 4.4.3.5 and 4.4.3.6. Impact determinations are made for each species. When necessary, PD Measures were developed and

incorporated into the Project to reduce any potentially significant impacts to less than significant; see Section 4.4.5, *Mitigation Measures*, for a full list of proposed PD Measures, including species-specific measures in Section 4.4.5.1. As discussed in the sections referenced herein, impacts on any species identified as a candidate, sensitive, or special status species will be less than significant with incorporation of the proposed PD Measures.

IMPACT 4.4-2: Would the project have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service? (No Impact)

The Project site does not support any riparian habitat or otherwise sensitive natural communities identified in local or regional plans, policies, regulations or by the CDFW or USFWS as described in Section 4.4.3.7. The Project site is not located within designated final or proposed critical habitats for federally listed plant or wildlife species, nor is it located within or adjacent to critical habitats. The Project will have no impacts to these resources.

IMPACT 4.4-3: 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? (No Impact)

The potential for a substantial adverse effect from the Project 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 is assessed in Section 4.4.3.8. As discussed therein, no federally protected wetlands are present within the Project vicinity. Two state protected wetlands are present within the Project vicinity. The Project will avoid these wetlands; thus, the Project will have no impact on state or federally protected wetlands.

IMPACT 4.4-4: 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 native wildlife nursery sites? (No Impact)

The potential for the Project to 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 is assessed in Section 4.4.3.9. As discussed therein, the Project will have no impact on 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.

IMPACT 4.4-5: Would the project conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance? (Less than Significant Impact)

Potential conflicts with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance are assessed in detail in Section 4.4.4.10. As discussed therein, the potential for the Project to conflict with any local policies or ordinances protecting biological resources will be less than significant with incorporation of the proposed PD Measures.

IMPACT 4.4-6: Would the project conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan? (Less than Significant Impact)

Potential conflicts with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state Habitat Conservation Plan are assessed in Section 4.4.4.11. As discussed therein, the Project will not conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan with incorporation of the proposed PD Measures.

4.4.3.13 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kV gen-tie line between the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie line from the Project substation to the POCO within the gen-tie corridor south of I-80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie is described in further detail in Section 3.0, *Electrical Transmission*. Potential impacts from the PG&E gen-tie line are incorporated into the impacts assessed in Sections 4.4.3.1 through 4.4.3.12.

4.4.4 Cumulative Effects[16, 17]

The cumulative analysis provided in this document was developed by reviewing publicly available resources for active projects within Solano County, the City of Vacaville, and the City of Dixon (see Table 4.11-4 in Section 4.11, *Land Use and Planning*, of this document). The proposed Project is not anticipated to create or cause cumulative impacts to special status species when combined with other potential projects in the region for the following reasons:

- The proposed Project will result in a beneficial net gain of potential foraging and/or nesting habitat for special status species.
- With implementation of PD Measures **PD BIO-1** through **PD BIO-7,** the Project will avoid or minimize impacts to special status species regulated by the CDFW and/or USFWS.
- During the operations and maintenance phase of the Project, access to the facility is expected to be minimal and infrequent.

In addition, the Project will not impact natural sensitive communities including riparian habitat, state or federally protected wetlands, or established wildlife corridors. Therefore, the Project will not contribute to any significant cumulative effect to these resources. Thus, no cumulative impacts from this Project are anticipated.

[16] Appendix B (g) (1)
[17] Appendix B (g) (13) (E) (i)

4.4.5 Mitigation Measures [18, 19]

No mitigation measures for construction-related activities are proposed because the Applicant is incorporating the PD Measures described below into the design of the Project. The following sections describe measures to mitigate adverse environmental impacts, methods to monitor protected species, and overall best management practices for the proposed Project.

PD BIO 1: Best Management Practices, On-site Monitoring, and Worker Awareness Training

PD BIO-1a: The Applicant will submit the resumes, including contact information, of the proposed Designated Biologist and any Biological Monitors to the Compliance Project Manager (CPM). The resumes will include applicable degrees and experience for approval by the CPM. The approved Designated Biologist and Biological Monitors will be responsible for overseeing biological resources compliance with the protective measures during any site or related facilities mobilization, ground disturbance, construction, and closure activities. The Designated Biologist and Biological Monitors will have the authority to halt activities in violation of the biological resources protective measures or in areas which may affect a sensitive resource or species. If the Designated Biologist and Biological Monitor halts construction activities, the CPM will be notified, and work will proceed only after corrective measures have been taken. The Designated Biologist and Biological Monitors will have a copy of the Project permit(s) with them during all construction activities and will notify the Applicant and the CPM of any noncompliance with biological resources.

PD BIO-1b: Qualified biologists will conduct preconstruction clearance surveys for all special status wildlife species prior to initial ground-disturbing activities. The biologists will be current with the latest information on protocols and guidelines and have thorough and current knowledge of relevant species' behavior, natural history, ecology, and physiology.

PD BIO-1c: Based on the results of preconstruction surveys, the approved Designated Biologist or Biological Monitor may oversee the initial ground disturbance of Project construction activities with the potential to impact special status species.

PD BIO-1d: A Worker Environmental Awareness Program (WEAP) will be prepared, and approved by the CPM, to address the types of construction activities that may affect special status species. The WEAP will describe the protective measures stipulated in the permits. Special emphasis will be placed on explaining the protective measures developed for special status species and the consequences of noncompliance. At a minimum, the program will contain information on physical characteristics, distribution, behavior, ecology, sensitivity to human activities, legal protection, penalties for violations, reporting requirements, and protective measures associated with the listed species. The WEAP will be administered to all onsite personnel including employees, contractors, contractors' employees, supervisors, inspectors, subcontractors, and delivery personnel. The program will be administered onsite by the approved Designated Biologist or Biological Monitor. It may include an oral presentation, video/PowerPoint, and written materials.

[18] Appendix B (g) (1); Appendix B (g) (13) (F) through (g) (13) (F) (iii)
[19] Appendix B (g) (13) (G)

PD BIO-1e: To discourage attraction by predators of protected species, all food-related trash items, such as wrappers, cans, bottles, and food scraps, will be disposed of in solid, closed containers (trash cans) daily. Onsite trash receptacles will be emptied as necessary (for example, weekly) to prevent overflow of trash. Trash removed from the receptacles will be hauled to an offsite waste disposal facility.

PD BIO-1f: Project-related vehicles during construction will observe a 15-mile-per-hour speed limit while onsite, except on county roads and state highways.

PD BIO-1g: To prevent inadvertent entrapment of special status species, or other animals during construction, at the end of each workday all excavated, steep-walled holes or trenches more than 2 feet deep will be equipped with one or more escape ramps constructed of earth fill or wooden planks or potentially covered with plywood or similar materials if feasible . Before such holes or trenches are filled, they will be thoroughly inspected for trapped animals by the onsite Biological Monitor or construction personnel trained by the monitor. If a trapped special status wildlife species is discovered, the appropriate agency, USFWS and/or CDFW will be contacted.

PD BIO-1h: To control erosion, sedimentation, and/or the release of storm waters laden with sediment, fuels, lubricant, and other deleterious material from out of the approved work areas during and after Project implementation, the Applicant will implement appropriate best management practices which typically include straw wattles, silt fences, straw bales and diverting runoff from disturbed areas. All fueling and maintenance of vehicles and other equipment and staging areas will occur at least 200 feet from any water body. Spill response materials will be kept onsite at all times. Before work begins, the Applicant will provide prompt and effective response to any accidental spills. During the WEAP, all workers will be informed of the importance of preventing spills and of the appropriate measures to take should a spill occur.

PD BIO-1i: Access by Project-related personnel to the Project site will be restricted to established and/or approved access roads. Cross-country vehicle and equipment use outside designated work areas will be prohibited.

PD BIO-1j: Other than law enforcement or security personnel, Project personnel will be prohibited from bringing pets and firearms to the Project site.

PD BIO-1k: All unused material and equipment, including soil and rock piles, will be removed upon completion of construction.

PD BIO 2: Migratory Birds

PD BIO-2a: If Project ground-disturbing or vegetation clearing and grubbing activities commence during the avian breeding season (February 1 through August 31), a qualified biologist shall conduct a pre-construction nesting bird survey no more than 14 days prior to initiation of Project activities. The survey area shall include suitable raptor nesting habitat within 300 feet of the Project boundary (inaccessible areas outside of the Project site can be surveyed from the site or from public roads using binoculars or spotting scopes). Pre-construction surveys are not required in areas where Project activities have been continuous since prior to February 1, as determined by a qualified biologist. Areas that have been inactive for more than 14 days during the avian breeding season must be re-surveyed

prior to resumption of Project activities. If no active nests are identified, no further mitigation is required. If active nests are identified, the following measure is required:

- A suitable buffer (for example, 660 feet for eagles, 300 feet for common raptors; 100 feet for passerines) shall be established by a qualified biologist around active nests and no construction activities within the buffer shall be allowed until a qualified biologist has determined that the nest is no longer active (that is, the nestlings have fledged and are no longer reliant on the nest, or the nest has failed). Encroachment into the buffer may occur at the discretion of a qualified biologist. Any encroachment into the buffer shall be monitored by a qualified biologist to determine whether nesting birds are being impacted.

PD BIO-2b: All pipes, hoses, culverts, or similar structures larger than 4 inches in diameter shall be closed, covered or capped to prevent burrowing owl entry upon arrival to the Project site. All similar structures greater than 4 inches in diameter may be capped or shall be inspected thoroughly for wildlife before the structure is buried, capped, used or moved at the Project site.

PD BIO-2c: Project facility lighting shall be designed to provide the minimum illumination needed to achieve safety and security objectives. All lighting shall be directed downward and shielded to focus illumination on the desired areas only and avoid light trespass into adjacent areas. Lenses and bulbs shall not extend below the shields.

PD BIO-2d: Rodenticides shall not be used at the Project site. If rodent control is required to minimize impacts on adjacent agricultural operations, non-chemical methods will be employed.

PD BIO-3: Reduce Bird Electrocutions and Collisions with Power Lines

The Applicant will ensure that new transmission lines and associated equipment will be properly fitted with wildlife protective devices to isolate and insulate structures to prevent injury or mortality of birds, to the extent feasible. Protective measures shall consider the guidelines provided in *Suggested Practices for Avian Protection on Power Lines, The State of the Art in 2006* (APLIC 2006) and *Reducing Avian Collisions with Power Lines: The State of the Art in 2012* (APLIC 2012), or the current Avian Power Line Interaction Committee guidelines in place at the time the transmission lines are installed, and will include insulating hardware or conductors against simultaneous contact, using poles that minimize impacts on birds, and increasing the visibility of conductors or wires to prevent or minimize bird collisions.

4.4.5.1 Species-specific Avoidance, Minimization, and Mitigation Measures

PD BIO-4: Crotch's Bumble Bee Preconstruction Survey

Preconstruction surveys for Crotch's bumble bee shall be performed in all suitable habitat within the Project disturbance area and a 50-foot buffer around it by a qualified biologist within 2 weeks prior to the start of construction. Surveys will include a minimum of two survey efforts which shall not occur on sequential days. The surveys will be conducted in weather conditions suitable for surveys as outlined in CDFW's *Survey Considerations for California Endangered Species Act Candidate Bumble Bee Species* (CDFW 2023). The purpose of the preconstruction survey will be to identify individuals, active nest colonies, and associated floral resources outside of permanent and temporary impact areas that could be avoided by construction personnel.

If an individual Crotch's bumble bee is detected within 50 feet of Project activity, a qualified biologist or biological monitor will be onsite during any ground disturbance (e.g., earthmoving, excavation, trenching) and/or vegetation removal activities that occur when Crotch's bumble bee are present within the activity footprint. A 25-foot no-disturbance buffer will be implemented around Crotch's bumble bee individuals within the area and monitored until it leaves the area on its own.

If an active nest colony is found, a 50-foot no-work buffer will be implemented to protect the active nest and floral resources. Construction activities will not occur within the no-work buffer until the colony is no longer active (that is, no bees are seen flying in or out of the nest for three consecutive days, indicating the colony has completed its nesting season and the next season's queens have dispersed from the colony). If a 50-foot buffer around the nest cannot be maintained, the Applicant will consult with CDFW about alternative protective measures that are sufficient to minimize the risk to the active colony nest.

PD BIO-5: Burrowing Owl Preconstruction Survey

Preconstruction surveys shall be performed in all suitable habitat areas in the Project disturbance area and 500 feet (approximately 150 meters) around the Project disturbance area by a qualified biologist no less than 14 days prior to initiation of ground disturbing activities, including vegetation clearing. The survey will begin 1 hour before sunrise and continue until 2 hours after sunrise (3 hours total) or begin 2 hours before sunset and continue until 1 hour after sunset. A minimum of two surveys will be conducted (if owls are detected on the first survey, a second survey is not needed). All owls observed will be counted and their location will be mapped. If the work activities halt for a period of 14 days or more, the survey would need to be conducted again prior to the continuation of site activities.

If burrowing owls are detected within the Project disturbance area or within 500 feet (approximately 150 meters) during the preconstruction surveys, a Project-specific mitigation plan shall be prepared for the CEC and CDFW review, approval, and implementation to protect burrowing owl and their nest sites. As defined in the *Staff Report on Burrowing Owl Mitigation* (CDFG 2012), buffer size is dependent upon time of year and level of disturbance at the Project site. Depending on the level of disturbance, a smaller buffer may be established in consultation with CEC and CDFW. The burrowing owl survey may be conducted in conjunction with the preconstruction nesting bird survey, if timing is appropriate.

PD BIO-6: Swainson's Hawk

The following measures will be implemented to avoid and minimize impacts of the Project on Swainson's hawk:

PD BIO-6a: The Applicant will, to the maximum extent feasible, limit construction and vegetation removal with 0.25 mile of known nests, to outside of the nesting season for Swainson's Hawk, between September 15 and March 1, to avoid impacting nesting individuals.

PD BIO-6b: If construction will occur during the breeding season for Swainson's Hawk, March 1 through September 15, the Project Proponent will retain qualified wildlife biologists (experienced with raptor identification and behaviors) to conduct focused surveys for Swainson's hawk nesting before construction begins. Survey methodology will follow the Swainson's Hawk Technical Advisory

Committee's survey methodology (Swainson's Hawk Technical Advisory Committee 2000). Focused surveys for Swainson's hawk nesting will be conducted in the proposed disturbance area and in a buffer area of 0.25 mile around the disturbance area. The portions of the Swainson's hawk survey buffer area containing unsuitable nesting habitat and/or with an obstructed line of sight to the disturbance area will not be surveyed. No active Swainson's hawk nest trees will be removed during the nesting season.

If the qualified wildlife biologists find an active Swainson's hawk, a 0.25-mile no-work buffer will be implemented between construction activities and the active nest(s) until it has been determined that the young have fledged or as otherwise approved through consultation with CDFW. The wildlife biologists will mark the no-work buffer with stakes and signs and will check the location to ensure that the signs are in place and the buffer is being maintained. No work will be authorized within the buffer during the breeding season, except for vehicle travel.

If a 0.25-mile buffer around the nest cannot be maintained, the Applicant and a qualified wildlife biologist will consult with CDFW about alternative protective measures that are sufficient to minimize the risk of nest disturbance, such as a reduced buffer with full-time nest monitoring by a qualified wildlife biologist. If nesting SWHA exhibit agitated behavior indicating stress, the qualified Biological Monitor will have the authority to halt construction in that area until the Applicant has consulted with CDFW to determine if additional measures are required.

PD BIO-7: Notification to the California Natural Diversity Database. If any special status species are detected during Project surveys or during Project activities, the Applicant shall submit CNDDB Field Survey Forms to CDFW in the manner described at the CNDDB website (https://www.wildlife.ca.gov/Data/CNDDB/Submitting-Data) within 5 working days of the sightings.

4.4.5.2 Additional Compensatory Mitigation[20]

The Applicant is not proposing additional compensatory mitigation for the proposed Project for the following reasons:

- Following the completion of Project construction, all temporarily impacted areas will be revegetated with an application of native seed mix to promote passive restoration of areas to pre-Project conditions.
- The Project will result in 15.9 acres of permanent impacts on agricultural lands that provide low-quality habitat for the majority of special status species that occur in the vicinity of the Project. In addition to these permanent impacts, 21.6 acres of orchard lands, which are not suitable habitat for the special status species as discussed in Sections 4.4.3.5 and 4.4.3.6, will be permanently removed from the gen-tie corridor and laydown area and, following construction of the gen-tie line, will be available for use and is anticipated to benefit the special status species that may occur in the Project vicinity. The result is a net gain of 5.7 acres of suitable habitat land as a result of Project construction.

[20] Appendix B (g) (13) (F) (ii)

4.4.6 Laws, Ordinances, Regulations, and Standards[21]

The following section includes the federal, state, and local laws, ordinances, regulations, and standards as they apply to biological resources in the Project area. The laws, ordinances, regulations, and standards described were used to determine how impacts to biological resources should be evaluated.

4.4.6.1 Federal

Federal Endangered Species Act (16 United States Code Section 1531 et seq.). Section 9 prohibits the "take" of species listed as endangered or threatened under the federal ESA. "Take" is defined by regulation as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." "Harm" is further defined by the USFWS to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined by the USFWS as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering. "Incidental take" is defined as take that is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity.

Although "take" of a listed species is prohibited under ESA Section 9, incidental take authorization may be obtained pursuant to ESA Section 7 or Section 10. Species that are not listed are not protected by the ESA, even if they are candidates for listing; however, the USFWS advises that a candidate species (as well as species of concern) could be elevated to listed status at any time, and applicants, therefore, should regard these species with special consideration.

MBTA (16 United States Code Section 703 - 711) protects all migratory birds, including nests and eggs.

BGEPA (16 United States Code Section 668) specifically protects bald and golden eagles from harm or trade in parts of these species.

Sections 401 and 404 of the CWA prohibits the discharge of dredged or fill material into WOTUS, including wetlands, without a permit from the USACE. The definition of WOTUS includes rivers, streams, estuaries, the territorial seas, ponds, lakes, and wetlands. Wetlands are defined as those areas "that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (33 Code of Federal Regulations 328.3 7b). Under Section 10 of the Rivers and Harbors Act of 1899, the USACE has the authority to regulate the navigable capacity of any WOTUS. Under the CWA, it is not lawful to excavate or fill, or in any manner alter or modify the course, location, condition, or capacity of…any navigable water of the United States."

All Section 404 CWA permit actions require water quality certification or a waiver pursuant to Section 401 of the CWA. This authority has been delegated by the U.S. Environmental Protection Agency to the

[21] Appendix B (i) (1) (A)

California SWRCB, who delegates regional authority to the Regional Water Quality Control Boards (RWQCBs).

4.4.6.2 State

California ESA (Fish and Game Code Section 2050 et seq.) states that species listed as threatened or endangered in California cannot be "taken" or harmed unless such "take" is authorized pursuant to an incidental take permit. "Take" currently is defined as to do or attempt to do the following: hunt, pursue, catch, capture, or kill a member of a listed species.

California Code of Regulations (Sections 670.2 and 670.5). California SSC is a category conferred by the CDFW to fish and wildlife species that meet the state definition of threatened or endangered, but have not been formally listed (e.g., federally or state listed species), or are considered at risk of qualifying for threatened or endangered status in the future based on known threats. SSC is an administrative classification only, but these species should be considered "special status" for the purposes of the CEQA analysis.

California Fish and Game Code Section 3511 describes bird species, primarily raptors, that are "fully protected." Fully protected birds may not be taken or possessed, except under specific permit requirements.

California Fish and Game Code Section 3503 states that it is 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.

California Fish and Game Code Section 3503.5 protects all birds of prey and their eggs and nests.

California Fish and Game Code Section 3513 makes it unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird.

California Fish and Game Code Sections 4700, 5050, and 5515 list mammal, amphibian, and reptile species that are fully protected in California.

California Fish and Game Code Section 1900 et seq., the California Native Plant Protection Act, protects rare plants listed as threatened, endangered, and rare.

California Fish and Game Code Section 1600 et seq. prohibits alteration of any stream or lake, including intermittent and seasonal channels and many artificial channels, without a Streambed Alteration Agreement from CDFW. This applies to any channel modifications that will be required to meet drainage, transportation, or flood control objectives of a project.

CEQA (Public Resources Code Section 15380) defines "rare" in a broader sense than the California ESA and CDFW definitions of threatened, endangered, or SSC. Under this definition, the CDFW can request additional consideration of species not otherwise protected. CEQA requires that the effects of a project on environmental resources must be analyzed and assessed using criteria determined by the lead agency.

Section 13263 of the Porter-Cologne Water Quality Control Act authorizes the RWQCB to regulate discharges of waste and fill material to waters of the State, including "isolated" waters and wetlands,

through the issuance of water quality certifications or waste discharge requirements (WDR). The RWQCB typically issues WDRs for projects undergoing an Individual Section 404/10 process pursuant to USACE and USFWS requirements. Since WDRs must be approved by the elected board, public outreach is also a component of WDR permitting activity.

Native Plant Act of 1973 (Fish and Game Code Sections 1900–1913) includes provisions that prohibit the taking of endangered or rare native plants. The CDFW administers the Native Plant Protection Act of 1973 and generally regards as rare many plant species included on CRPR 1A, 1B, 2A, and 2B of the CNPS Inventory of Rare and Endangered Vascular Plants of California. In addition, sometimes CRPR 3 and 4 plants are considered if the population has local significance in the area and is impacted by the project. Section 1913(b) includes a specific provision to allow for the incidental removal of endangered or rare plant species, if not otherwise salvaged by the CDFW, within a right-of-way to allow a public utility to fulfill its obligation to provide service to the public.

California Food and Agriculture Code 403 states that the California Department of Food and Agriculture (CDFA) shall prevent the introduction and spread of injurious insect or animal pests, plant diseases, and noxious weeds. CDFA Code Section 5004 defines a noxious weed as any species of plant that is, or is liable to be, troublesome, aggressive, intrusive, detrimental, or destructive to agriculture, silviculture, or important native species, and difficult to control or eradicate.

4.4.6.3 Local

Solano County General Plan

The Solano County General Plan (2008) encompasses all unincorporated areas of Solano County, which totals approximately 782 square miles (86 percent of Solano County). This includes all areas outside of seven incorporated cities: Benicia, Dixon, Fairfield, Rio Vista, Suisun City, Vacaville, and Vallejo. The Solano County General Plan, Chapter 4, *Resources*, has multiple policies related to biological resources:

> ***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.*

The Solano Multi-Species Habitat Conservation Plan (2012) establishes a framework for complying with federal and state regulations for endangered species undertaken by or under the permitting authority/control of the Habitat Conservation Plan participants within the plan area. Although the Project is not considered a covered activity under the Solano Multi-Species Habitat Conservation Plan

it is considered to be the best available information when considering impacts of proposed projects on the full range of protected wildlife, plants, and habitats that occur in Solano County. Additionally, the Solano Multi-Species Habitat Conservation Plan development has been guided by a collaborative effort among several local, state, and federal agencies intended to provide an effective framework to protect, enhance, and restore natural resources in the County and enable local projects to comply with state and federal regulatory requirements. The implementation of the avoidance and minimization measures **PD BIO-1** through **PD BIO-7**, and the restoration of temporarily disturbed areas, is consistent with the measures proposed in the Solano Multi-Species Habitat Conservation Plan. Thus, impacts to local policies will be less than significant with the proposed PD Measures incorporated.

City of Vacaville General Plan

The City'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 (City of Vacaville 2015):

> ***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 (see Appendix A for a list of the Avoidance and Minimization Measures that are applicable to Vacaville). In addition, require that development projects provide copies of required permits, or verifiable statements that permits are not required, from the California Department of Fish and Wildlife (2081 Individual Take Permit) and US Fish and Wildlife Service (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.*

4.4.7 Agencies and Agency Contacts[22, 23]

Agencies and agency contacts relative to biological resources for the Project are provided in Table 4.4-6. Appendix 4.4-E includes copies of preliminary correspondence between the Applicant and state and federal resource agencies regarding whether federal or state permits from other agencies will be required for the Project.

Table 4.4-6. Agency Contacts for Biological Resources[24]

Agency	Contact	Permit/Issue
U.S. Fish and Wildlife Service (USFWS)	Ryan Olah, USFWS Sacramento Fish and Wildlife Office	Endangered Species Act (ESA)
California Department of Fish and Wildlife (CDFW)	Brenda Blinn, Bay Delta, Region 3	California ESA, Incidental Take Permit, Lake and Streambed Alteration Agreement
U.S. Army Corps of Engineers	Mary Pakenham-Walsh, Chief, CA Delta Section	Clean Water Act Section 404
Regional Water Quality Control Board (RWQCB)	Stephanie Tadlock Senior Environmental Scientist Stephanie.Tadlock@waterboards.ca.gov	Clean Water Act Section 401, RWQCB Waste Discharge Requirement

4.4.8 Required Permits and Permitting Schedule[25, 26]

No state or federal permits will be required because impacts to biological resources will be avoided through implementation of the proposed PD Measures.

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[23] Appendix B (i) (2)
[24] Appendix B (i) (2)
[25] Appendix B (i) (1) (B)
[26] Appendix B (i) (3)
[27] Appendix B (g) (1)

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4.5 Cultural Resources

This section identifies and evaluates issues related to cultural resources in the context of the Corby Battery Energy Storage System Project (Project). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

This analysis is based on the Final Cultural Resources Inventory Report for the Corby Battery Energy Storage System Project in Solano County, California, technical report prepared by ICF (submitted under a request for confidentiality pursuant to California Code of Regulations [CCR], title 20, section 2501 et seq. [Confidential Appendix 4.5-A[1,2]]). In accordance with the California Environmental Quality Act (CEQA) and the requirements listed in Title 20, California Code of Regulations, section 1704, Appendix B (e.g., Siting Regulation (g) (1)), ICF conducted a cultural resource study to determine whether the Project will result in a substantial adverse change in the significance of an archaeological or historical resource (Sections 21083 and 21084 et seq. of the California Public Resource Code [PRC]; under CCR, Title 14, Chapter 11.5, section [§] 15064.5). The cultural resources study encompassed the Project footprint (all areas that may be impacted by ground-disturbing activities) plus a 200-foot survey buffer for the archaeological study area, and a 0.5-mile buffer for the architectural history study area. For the linear generation tie (gen-tie) alternatives, a 50-foot survey buffer was used. The cultural report details the results of the records and literature search, California Native American Heritage Commission (NAHC) sacred lands file (SLF) search, coordination with Tribal groups and individuals, cultural resource field survey, and resource evaluations for the proposed Project. Due to the culturally sensitive nature of the information in the document, the cultural report has been filed separately under confidential cover (pursuant to CCR § 15120(d)). The results of the cultural report are provided in this section. The preparers of this application independently reviewed the cultural report and other materials prepared by or on behalf of the Applicant and determined them to be suitable for reliance (in combination with other materials included in the formal record) in the preparation of this application.

4.5.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5?			X	
2.	Cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5?			X	
3.	Disturb any human remains, including those interred outside of dedicated cemeteries?			X	

[1] Appendix B (g) (2) (C) (i through v)
[2] Appendix B (g) (2) (D) (1 through 3)

4.5.2 Affected Environment[3]

4.5.2.1 Regional and Local Setting

Situated midway between San Francisco and Sacramento, Solano County is home to rolling hillsides, waterfronts, and fertile farmland. Eighty percent of the County is rural agricultural or open space. The Project is bordered by coastal mountain ranges to the west and the Central Valley to the east. It is located within the Great Valley geomorphic province, which is characterized by an alluvial plain with a continuous deposit of sediment accumulating since the Jurassic period (between 200 and 140 million years old; Confidential Appendix 4.5-A). The Project site is located within the Sodic Claypan Terraces subsection of the Great Valley, with soil types including clay and sandy loam.

The Project is located on an existing agricultural parcel, currently used as an irrigated pasture. The land immediately surrounding the Project is also an agricultural use; to the south and east are irrigated pastures, and to the north and west are orchards. A ranch and farmhouse are approximately 130 feet to the north of the Project. Other nearby properties include electrical facilities (i.e., substation and transmission lines), transportation infrastructure, agricultural lands (with row crops, irrigated pasture, and orchard), and rural single-family residences (Confidential Appendix 4.5-A).

4.5.2.2 Cultural Context[4]

The following is a brief overview of the cultural background relevant to the study area and general vicinity. Information presented here is excerpted from the ICF cultural resources report prepared for this Project (Confidential Appendix 4.5-A). Please refer to the ICF report for primary and secondary sources used to develop the cultural context.

Prehistoric Overview

In central California, cultural resources minimally represent 12,000 years of prehistory. Although written historical sources tell the story of only the past 200 years, archaeologists have reconstructed general trends of prehistory in the greater region. The Central Valley of California, at the western edge of which this study area is situated, is a region that extends to the Siskiyou Mountains in the north and as far south as the Tehachapi Mountains. The study area sits between the prehistoric cultural areas of the San Francisco Bay Area and the Central Valley's Sacramento-San Joaquin Delta and Valley.

There is no single cultural historical framework that encompasses the entire prehistoric record of the Central Valley. The generalized cultural sequence typically used in this area includes the Paleo-Indian Period (13,500 to 10,500 calibrated years Before Present [cal BP]), Lower Archaic Period (10,500 to 7500 cal BP), Middle Archaic Period (7500 to 2500 cal BP), Upper Archaic Period (2500 cal BP to calibrated years Anno Domini [cal AD] 1000), and Emergent Period (cal AD 1000 to Historic). Since no prehistoric resources were identified in the Project area, and only one previously recorded pre-contact isolate was recorded within 1 mile of the Project, the reader is referred to sources cited in the ICF cultural resources report for further detail about the prehistory of the area (Confidential Appendix 4.5-A).

[3] Appendix B (g) (1); Appendix B (g) (2) (A)
[4] Appendix B (g) (2) (A)

Ethnographic Overview

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 the Wintun speakers, along with the Miwok, Maidu, Coastanoan, 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. 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.

The people on the north shore of Suisun Bay in the Fairfield 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. 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. Because of the lack of information on the material culture, social culture, and oral traditions of the Suisun people, it is assumed that they lived much the same as their neighbors to the north, with whom they shared the same language.

Hunting and fishing were performed by either individuals or small groups. Fish, including salmon, trout, and steelhead, were caught using nets, and mussels were collected from the riverbed. Many other animals, including tule elk, deer, antelope, and bear, as well as ducks, geese, quail, and other birds, were hunted, using the bow and arrow or, in some cases, decoys. Acorns were a primary staple among the Patwin, who would gather two types of valley oak acorns, the hill and the mountain oak. Baskets were mostly used in the gathering of acorns, buckeye, pine nuts, juniper berries, manzanita berries, blackberries, wild grapes, brodiaea bulbs, and tule roots. Sunflower, alfilaria, clover, bunch grass, and wild oat, all which grew on the open plains, provided seeds that were parched or dried and then pounded into meal. Each village had its own locations for gathering these various resources, and the village chief was in charge of assigning particular families to collection areas.

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 at Mission San Francisco. 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.

Historic Overview

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.

Early Frontier Settlement (1776 to 1848)

Spanish colonization efforts in the San Francisco Bay Area 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.

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. Swiss entrepreneur John Sutter established a settlement in Sacramento that supported the expansion of transportation and trade routes through the bays and rivers between Sacramento and San Francisco. 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-American War and the Treaty of Guadalupe Hidalgo (1848), in which Mexico ceded Alta California to the United States.

Statehood and Early Development (1849 to 1920)

The mid-19th 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.

The arrival of American, European, and Asian populations led to an immediate diversification in agriculture to meet the subsistence needs and market interests of the new settlers. Reclamation and flood control efforts began to drain marsh properties and promote farming. Orchards, vegetables, and varieties of livestock were farmed, and, although cattle ranching retained its open-range character, there was a shift from hide and tallow breeds to beef cattle. Market hunting of Suisun Marsh waterfowl proliferated in support of San Francisco, Suisun City, and Sacramento. In 1852, the federal government established a naval shipyard at Mare Island and an Army arsenal at Benicia.

Waterways were the primary avenues of travel and transport during these times. Suisun, Cordelia, Franks, and Wells Sloughs were navigable, and numerous docks facilitated ferry transport. However, a severe winter storm in 1862 caused flooding that devastated Solano County. As the region recovered, it saw the new Central Pacific Railroad supersede water-based public and commercial transport. Despite this overall trend, ferries adapted to transporting people and goods to rail stations, and larger ferries even transported train cars.

Solano County Agriculture and Development of Vacaville (1920 to Present)

From the early 20th century through the present, agriculture has remained a driving force behind the economy of Solano County. Development of agricultural land—which started in the 1850s—has intensified and persisted through the present, with today over 62 percent of the land in the county devoted to agriculture use; half of this area is used for irrigated agriculture, and the other half is devoted to dryland farming and grazing. This environment, rich in agricultural wealth, led to investment in the community by ranching families. 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. This trend of growth 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. This growth was concurrent with economic growth and the development of large retail properties such as the neighboring Vacaville Outlets. 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.

Residential Agricultural Properties

Over half of Solano County is designated as agricultural use with more than 800 farms occupying the region. With this, several property types in the study area are associated with this use and comprise 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.

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. However, with the completion of the Monticello Dam in 1957, irrigation allowed the valley areas of Solano County to transition to field crops, specifically sugar beets, tomatoes, corn, and wheat. 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.

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. It is not uncommon to see dilapidated homes, sheds, and general agricultural infrastructure in a variety of massing and scale.

Agricultural buildings and structures in the study area date from 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 20th 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.

Energy Infrastructure

Pit Hydroelectric Project and Pit River Developments

By the close of the 1910s, Pacific Gas and Electric (PG&E) had integrated holdings inherited at formation and embarked on ambitious development schemes, with the initial 1910s Drum-Spaulding

construction serving as the company's largest area of expansion. Additionally, 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. PG&E also faced a series of external challenges, including the industrial demands and material limitations of World War I and back-to-back drought years during the late 1910s and early 1920s that slowed hydroelectric production. Within this context, PG&E was forced to initiate energy rationing just as the company was seeking to grow its consumer base.

By 1920, the population of the PG&E service area was more than 1.8 million, 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 kilowatt (kW) hours per capita annually, Californians on average consumed 1,085 kW hours each. Within this broadening consumer context, the utility found the energy shortage particularly acute.

As summarized by *Pacific Service Magazine* in January 1920 (cited in the IFC report, Confidential Appendix 4.5-A):

> *Today it is an accepted fact that our Golden State of California possesses limitless possibilities in the way of agriculture, industrial, and every other kind of development and that the one thing needed to enable her people to realize their fondest hopes is continuous cheap electric power. By cheap electric power it is meant power that can be manufactured and distributed at such a price as to bring it within the range of the "little fellow." It is not the one great spectacular industrial establishment, with its daily consumption of so many thousand-kilowatt hours that establishes the prosperity of a community: it is rather the aggregate of small users. To bring this prosperity about we must have power at our disposal and plenty of it—hydroelectric power. We must look for the energy that will place California where she belongs by right of her extraordinary natural advantages…Our Sierra peaks stand ready to furnish at the word of command.*

Despite the inherent plenty of the Sierra, a period company report lamented, "In the past ten years there has been practically no transmission capacity added, with the exception of the Drum-Cordelia line, and no capacity into San Francisco has been added…The need of the system now is for more transmission line capacity" (as cited in the IFC report, Confidential Appendix 4.5-A).

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 (MW) and transmission voltage of 220 kilovolt (kV) serving as operational milestones in hydroelectric development.

The 220-kV transmission line that connected the Pit Project to the associated Vaca-Dixon Substation represented the most advanced transmission design during the period, running at the highest commercial voltage developed to date and the 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. Although Pit No. 1 helped relieve the critical energy shortage of the Bay, continued drought plagued California during the winters of 1923 and 1924. By 1925, PG&E had brought an additional Pit powerhouse online. Pit No. 3, located downstream from Pit No. 1, added 70,000-kW capacity to the system. Like Powerhouse No. 1, Pit No. 3 was engineered by Frank Baum and designed by Ivan Frickstad, with an architectural expression that was stylistically subservient to, but expressive of, the revival design themes of Pit No. 1 and the associated Vaca-Dixon Substation.

PG&E's 1920s expansion on the Pit River was a key step in the development of multi-phased hydroelectric generation. Although it was not until the 1940s that further expansion of the system occurred, with the completion of Pit No. 5 in 1944 followed by Pit Nos. 4, 6, and 7 by 1965, the 1920s development led by Baum, Frickstad, and others exists as a singular moment of expansion for the company that laid the operational foundation for long-term twentieth century growth.

Although water rights and development potential for the Pit River was the real prize of PG&E's 1919 purchase of Northern California Power Company Consolidated, the addition of the small utility company also brought six additional previously constructed hydroelectric power plants into the PG&E portfolio. The plants had a 30,000-kW combined output and a distribution area of 5,000 square miles in six northern counties. Although dwarfed by PG&E's larger holdings, the facilities represented both an increase in PG&E's service area and promising sites for future operational efficiencies under PG&E's integrated system. As summarized by PG&E, "At the present time the Northern is producing about 30,000 horsepower of electric energy but it should be needless to inform our readers that under the ownership of 'Pacific Service' these properties will be developed to the fullest extent possible. It will be seen then that with a larger market for its power the Northern can be made of far greater value than is possible under current operating conditions" (as cited in the IFC report, Confidential Appendix 4.5-A) .

The Northern California Consolidated powerhouses included the 1901 Volta Powerhouse, 1904 Kilarc Powerhouse, 1907 Cow Creek Powerhouse, 1910 Inskip and South Powerhouses, and 1911 Coleman Powerhouse. The service area included regional centers such as Red Bluff, Redding, Corning, Orland, Willows, and Williams as well as dispersed agricultural and mining customers. In particular, the system catered to the numerous copper mines proliferating in the region, which produced copper supplies that were critical for transmission conductors and other burgeoning industrial uses.

The former Northern California, Consolidated holdings today remain an operating component of the PG&E system; however, all generating facilities but Kilarc and Cow Creek were demolished and replaced by PG&E with new facilities during the 1980s.

500-kV Transmission

While PG&E was diversifying 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 PG&E's 1961 Annual Report, the company announced, "PG&E and other members of the California Power Pool have jointly offered to construct a line of not less than 500, 000 volts from Shasta County to Southern California, making Northwest power supplies available on terms which will make construction of the line economically feasible." The announcement was significant in two respects. First, 500-kV electrical transmission, termed Extra High Voltage (EHV), 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. This "Pacific Intertie" program was the first of several major interconnected campaigns in the latter decades of the twentieth century that sought to stabilize and bolster California's energy supplies with power generated from the hydro supplies of the Pacific Northwest.

Initial construction began in 1962, with a transmission alignment connecting PG&E's Round Mountain Substation with a concurrently constructed Pacific Power and Light alignment leading from Oregon. While 500-kV transmission operated on the same general alternating current (AC) precepts established decades earlier, with phased power stepped up and down from generation to distribution, the transmission structures designed by PG&E engineers departed in several respects from the established 220 transmission design. The tower itself was an imposing lattice steel H-Frame that was designed to provide the necessary clearance between conductor strands and have the torsion strength to hold the far heavier conductor and insulators. The design of the conductor itself also differed from earlier construction, with bundled strands of conductor wound together rather than single polyphase conductor strands. As summarized by PG&E engineers, "Up to now, with each increase in transmission voltage the Company has used larger diameter conductor…But to double voltage you must double diameter of conductor, this means an expensive, heavy, and hard to work with conductor. To get around this, [we have determined] that two or more smaller conductors may be used close together. More and more of this bundled conductor will be used in the future to hold down the number of new lines needed while supplying the greatly increased requirements of our service area" (as cited in the IFC report, Confidential Appendix 4.5-A).

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, with seven substations either rehabilitated or newly constructed and designated as EHV stations: Round Mountain, Table Mountain, Vaca-Dixon, Tesla, Metcalf, Los Banos, and Midway. In addition to housing the larger circuit breakers, transformers, and switching equipment necessary to relay and convert the 500-kV power, each substation was upgraded with leading edge computer technology for monitoring and regulation.

By the close of the 1960s, PG&E's EHV system was in place, with a transmission corridor that efficiently relayed power between West Coast utilities and within the PG&E system itself. In the decades that followed additional interconnected corridors have been developed outside of the PG&E service area by other public and private utilities, most notably the Pacific DC Intertie (Path 65), that carries Bonneville Power Administration electricity to Southern California through Oregon, Nevada, and parts

of California. At present, 500 kV remains the highest standard for transmission capacity in PG&E's service area.

4.5.3 Environmental Analysis[5,6,7,8,9]

4.5.3.1 Identification of Cultural Resources within the Project Site and Surrounding Area

Literature Review

In accordance with the CEQA and California Energy Commission (CEC) regulations and guidelines, cultural (historic resources) and Tribal cultural resources were identified using the following methods:

- A California Historical Resources Information System (CHRIS) records search via the Northwest Information Center (NWIC), Division of Anthropology, California State University, Sonoma;
- A review of properties listed in the National Register of Historic Places (NRHP) and California Register of Historical Resources (CRHR), or listed as California Historical Landmarks, California Points of Historical Interest, or listed in local registers of significant resources;
- A literature review (i.e., ethnographic and historic documents, historic aerial imagery and General Land Office plat and topographic maps review, Nationwide Environmental Title Research website and digitized newspaper archives);
- Primary and secondary sources, consisting of records, maps, photographs, and assessor records available at local historical societies and repositories, and *Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4* (Meyer and Rosenthal 2007);
- An NAHC SLF search and initial tribal outreach conducted by IFC;
- Cultural resource pedestrian field surveys; and
- Additional tribal outreach and tribal consultation to be conducted by CEC per Assembly Bill (AB) 52, as discussed in Section 4.5.6, *Laws, Ordinances, Regulations, and Standards*, and as detailed in Section 4.18, *Tribal Cultural Resources*, in this document.

NAHC SLF Search

ICF submitted an online request for an SLF search on February 8, 2024, by the NAHC, and the NAHC responded on January 19, 2024, that the results of the SLF search for the Project were negative (Confidential Appendix 4.5-A). The NAHC provided a list of Native American Tribes who may have knowledge of cultural resources in the Project area. In accordance with CEC regulations, the archaeological contractor, ICF, sent coordination letters to 12 contacts from five Native American Tribes identified by the NAHC as having interest in the Project site and region (see below).

[5] Appendix B (g) (1)
[6] Appendix B (g) (2) (A)
[7] Appendix B (g) (2) (B)
[8] Appendix B (g) (2) (C)
[9] Appendix B (g) (2) (C) cont.

Native American Outreach

ICF provided coordination letters to the Tribes identified by the NAHC. The letters provided a description of the Project, a map of the Project site, and a request for information regarding any cultural or Tribal cultural resources within or near the Project site, or if the Tribe had any questions, comments, or concerns regarding the Project (correspondence is contained in Confidential Appendix 4.5-A).

Native American Tribes Contacted:

- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Cortina Rancheria- Kletsel Dehe Band of Wintun Indians
- Guidiville Rancheria of California
- Wilton Rancheria
- Yocha Dehe Wintun Nation

To date, ICF has received three responses:

- On May 30, 2024, Dahlton 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.
    - ICF sent letters to the named individuals on May 30, 2024.
- 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.

To date, the Applicant has had one meeting with the Yocha Dehe Wintun Nation. The meeting took place on October 3, 2024, with tribal representatives Eric Hernandez, Site Protection Manager, and Socorro Reyes-Gutierrez, Site Protection Supervisor. Tribal representatives stated that the Nation's ancestral area include Yolo, Solano, Colusa, Napa, and Lake Counties, and requested the following items:

- A copy of the cultural resources report for review,
- A provision to provide cultural training for construction staff, and
- Inclusion of the Yocha Dehe Nation's Tribal Historic Preservation Officer as a designated contact in the project's Unanticipated Discoveries Plan.

Tribal consultation per AB 52 is discussed in Section 4.5.6, *Laws, Ordinances, Regulations, and Standards,* and as detailed in Section 4.18, *Tribal Cultural Resources*, in this document.

NWIC Records Review

ICF archaeologists conducted two NWIC records searches for the Project to identify previous cultural resources studies and records: on May 22, 2023, and on May 15, 2024. The NWIC identified 37 previous cultural resource studies within a 1-mile radius of the Project. Of the 37 previous cultural resource studies, 20 intersect the Project area. All of the surveys are over 10 years old, and most are over 20 years old.

The NWIC identified six previously recorded cultural resources within a 1-mile radius of the Project area (Table 4.5-1). 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 archaeological study area (defined as the Project footprint plus a 200-foot buffer). Two of the previously recorded cultural resources intersect the architectural history study area (defined as the Project footprint plus a 0.5-mile buffer). The resources identified within the 0.5-mile architectural history study area are denoted by an asterisk in the table below.

Table 4.5-1. Records Search Results: Previously Recorded Cultural Resources within a 1-mile-radius of the Project area.

Resource Number	Type	Description	Eligibility Status
P-48-000177 CA-SOL-000382H	Historic	Built Environment - Historic ranch building and well site	No data
P-48-000178 CA-SOL-000383H	Historic	Built Environment - Segment of Leisure Town Road	Potentially Eligible under Criterion A (Holland and Sanka 2013)
P-48-000409 CA-SOL-000362H	Historic	Refuse Scatter - Scatter of sheet iron, glass fragments, rusted metal, bolts, wood scraps and sawn bone.	No data
P-48-001604*	Historic	Built Environment - Segment of the Tulucay-Vaca 230kV Transmission Line.	Recommended Not Eligible for listing in the CRHR (Cardno ENTRIX 2012; Confidential Appendix 4.5-A)
P-48-002041*	Historic	Built Environment - Vaca-Dixon Substation	Recommended Eligible for listing in the CRHR under Criteria 1 and 3 (Baker and Bakic 2003; Confidential Appendix 4.5-A)
11-ISO-12	Pre-contact	Archaeological - Quartzite cobble	Not Eligible

*Denotes architectural resources within the Project disturbance footprint or 0.5-mile-radius architectural history study area

CRHR – California Register of Historical Resources; kV – kilovolt

Archaeological Field Survey and Results[10]

Secretary of Interior qualified archaeologists from ICF conducted intensive archaeological pedestrian surveys on June 7, 2023, November 21, 2023, and May 23-24, 2024. The archaeological surveys covered approximately 145 acres, consisting of the Project disturbance footprint plus a 200-foot survey buffer, and the gen-tie route options plus a 50-foot survey buffer, per CEC guidelines (Confidential Appendix 4.5-A). The survey area portions within the transmission switchyard (PG&E Vaca-Dixon Substation) and survey areas intersecting Assessor Parcel Numbers (APN) 0141030010, 0141030050, 0141030030, and

[10] Appendix B (g) (2) (C)

0141010080 were not surveyed due to inaccessibility. Approximately 16.5 acres were not surveyed due to inaccessibility.

Ground visibility throughout the archaeological study area was variable, from excellent (90–100 percent) in the graded sections of agricultural fields and the dirt roadway, to moderate (50–70 percent) in the plum orchards covered in light deadfall. Within the substation, ground visibility varied from poor (0–15 percent) in areas with overgrown vegetation, to excellent (80–100 percent) along gravel roads, within the substations and areas cleared of vegetation. Additionally, the gen-tie alignments crossed several unnamed agricultural aqueducts at both the northern and eastern edges (Confidential Appendix 4.5-A[11]).

On June 27, 2024, ICF architectural historians conducted an intensive pedestrian survey of the archaeological study area. The remainder of the 0.5-mile-radius architectural history study area was surveyed via driving areas of public access, such as public roads, and taking digital photographs.

Cultural Resources Identified within the Archaeological Study Area and 0.5-mile-radius Architectural History Study Area

The archaeological surveys identified no new archaeological resources within the archaeological study area.

Based on a review of previous studies, desktop research, and the field survey, ICF's architectural historians identified 14 potential built-environment historical resources within the 0.5-mile-radius architectural history study area. Two of these resources have been previously documented and evaluated for CRHR eligibility: the Tulucay-Vaca 230kV Transmission Line and the Vaca-Dixon Substation Historic District. The remaining 12 resources are newly documented built environment resources.

One of the previously documented resources—the Vaca-Dixon Substation Historic District—has been previously recommended as eligible for listing on the CRHR under Criteria 1 and 3. Two of the newly documented resources—the Vaca-Peabody 230 kV Transmission Line and the Vaca-Dixon-Tesla 500kV Transmission Line—are also recommended as eligible for listing in the CRHR. The other 11 resources are recommended as not eligible for listing in the CRHR. All 14 resources are summarized in Table 4.5-2 and described in more detail below.

Table 4.5-2. Field Survey Results: Cultural Resources Identified within the 0.5-mile-radius Architectural History Study Area

Resource Number	Type	Description	Evaluation
Previously Documented			
P-48-001604	Historic	Tulucay-Vaca 230kV Transmission Line, constructed in 1956	Recommended Not Eligible for listing in the CRHR (Cardno ENTRIX 2012; Confidential Appendix 4.5-A)

[11] Appendix B (g) (2) (C)

Resource Number	Type	Description	Evaluation
P-48-002041	Historic	Vaca-Dixon Substation Historic District, period of significance 1922-1944, delineated as the fenced portion of the substation center, contributing buildings include the substation building (individually eligible), the garage, landscaping along the north side, 4 storage buildings, and the switchyard.	Recommended Eligible for listing in the CRHR under Criteria 1 and 3 (Baker and Bakic 2003; Confidential Appendix 4.5-A)
P-01-0010499	Historic	Vaca-Dixon-Tesla 500kV Transmission Line, constructed 1967	Recommended Not Eligible for listing in the CRHR under Criterion 1 (Jacobs 2023; Confidential Appendix 4.5-A)
Newly Documented			
CB-01	Historic	7046 Mills Lane – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-02	Historic	7038 Mills Lane – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-03	Historic	7028 Byrnes Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-04	Historic	6991 Byrnes Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-05	Historic	6975 Byrnes Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-06	Historic	6957 Byrnes Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-07	Historic	5405 Kilkenny Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-08	Historic	5310 Kilkenny Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-09	Historic	7180 Meridian Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-10	Historic	5131 Ellsworth Road – Building/Structure	Recommended Not Eligible for listing in the CRHR
CB-11	Historic	Vaca-Peabody 230kV Transmission Line, constructed 1926	Recommended Eligible for listing in the CRHR under Criteria 1 and 3 (Confidential Appendix 4.5-A)

CRHR – California Register of Historical Resources

Previously Recorded Cultural Resources

Tulucay-Vaca 230kV Transmission Line (P-48-001604)

A portion of the Tulucay-Vaca 230kV 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 230kV 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,

thematic, or architectural merits using commonly available materials and well-established methods of design and construction. Based on IFC's updated 2024 evaluation, the Tulucay-Vaca 230kV Transmission Line is not significant under any NRHP/CRHR Criteria (Confidential Appendix 4.5-A).

Vaca-Dixon Substation 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 (Baker and Bakic 2002).

The ICF study did not have access to the switchyard facility to update the condition and historical integrity of the district since its initial recording in 2002. The initial recording recommended the Vaca-Dixon Substation building as individually eligible and contributing to the historic district. Other contributors to the district include the garage; landscaping along the north side of the substation property consists of mature vegetation, curved roads, and gently curved walkways; four small storage buildings that were formerly pump and storage houses; and the switchyard. The records search did not identify separate P numbers for the individually eligible building and the district; all records fall under the district record (Confidential Appendix 4.5-A).

The Vaca-Dixon Historic District has been recommended eligible for listing in the NRHP, and therefore also the CRHR, under the theme of hydroelectric/electric system development, with a period of significance from 1922 to 1944 (Baker and Bakic 2002). According to the 2002 recording, the district appears eligible under NRHP Criterion A (CRHR Criterion 1) because of the property's association with: 1) the rapid development of the San Francisco Bay area that resulted from the introduction of a major supply of hydroelectricity to the region; and 2) the first long distance 220-kV transmission in the world. Its period of significance under Criterion A/1 dates from 1922, the year the substation began receiving and transmitting electricity, to 1944, the year Pit 5 Powerhouse began operation and added its production to the transmission load at Vaca-Dixon (Baker and Bakic 2002).

According to the 2002 recording, the district appears eligible under Criterion C/3 as the work of a master and also for technology and engineering. It is the work of a master because of the property's representation of the architectural design of Ivan G. Frickstad with a period of significance dating to 1922, the year of the substation's completion. Ivan G. Frickstad, PG&E's head architect, authored many articles about the company's approach to its buildings and was largely responsible for instilling a high sense of architectural expression into PG&E's industrial structures of the 1920s. During the early 1900s under his direction, the Company used its embellishment of industrial structures as a way to improve public relations, market hydroelectricity, and uphold their public image as a company concerned about beautifying the landscape, both urban and rural. Frickstad was well known for his

work on Pit 1 Powerhouse, Station K in San Francisco, Cordelia Substation, Drum Powerhouse, and other Company projects (Baker and Bakic 2002). The Vaca-Dixon Substation represents the ideals and visions of both Baum and Frickstad, important pioneers in hydroelectric development and PG&E industrial architecture.

The Vaca-Dixon Substation was the highest powered of Frickstad's numerous substations in or associated with the San Francisco Bay region. Both its size and its emphasis on public access set Vaca-Dixon apart from the numerous urban distribution substations designed within the City of San Francisco itself. Frickstad designed the structure to evoke an impression of light and power, while enhancing its approachability. The elegant staircase leading to the leaded glass viewing platform at the front of the structure perfectly expresses Frickstad's desire to design a building that welcomes the public and enhances their appreciation of the power of both electricity and the Company. The matching cathedral-like windows present in the substation and the garage also represent Frickstad's desire to create an elegant and majestic atmosphere in what today would be considered merely industrial buildings (Baker and Bakic 2002).

According to the 2002 recording, the district appears eligible under Criterion C/3 at a state level of significance as a manmade expression of technology, in this case the first substation to handle 220-kV electricity in California and possibly the world. The ability to generate hydroelectricity in the mountain regions and transmit it long distances to the coastal urban markets revolutionized the potential for development in northern California and, eventually, the world. The substation site does represent an engineering breakthrough; however, it is uncertain if it represents the design of Frank Baum. Baum is credited with visualizing and planning the Pit River hydroelectric system, including the high voltage transmission features, but no direct links between Baum and the Vaca-Dixon Substation were found (Baker and Bakic 2002).

According to the 2002 recording, the district does not appear eligible under Criteria B/2 and D/4. Criterion B/2, as stated previously, deals with a property's significance for its association with persons important in the past. While Baum and Frickstad are considered significant in the history of northern California, their contribution is discussed under Criterion C/3 and not B/2 because neither individual lived or worked at the site. While the system was designed by Frank Baum, it does not include his home, laboratory or any other direct physical representation. The same may be said about Ivan Frickstad. The district does not appear eligible under Criterion D/4 because the site does not yield important information about history or technology that cannot be more readily acquired through plans and drawings available elsewhere, including PG&E's record repository (Baker and Bakic 2002).

Nearly all features of the substation remain in their original location, are intact and retain a high degree of the original materials (Baker and Bakic 2002). The district continues to operate in its original design and function as a substation control system. The setting has also remained unchanged since its 1922 construction period, its period of significance, except for the expansion of the switching yard with the addition of the 500-kV lines and the destruction of the permanent housing outside the substation district (Baker and Bakic 2002). It is assumed that the Vaca-Dixon Substation Center features retain integrity of location, setting, materials, design, workmanship, feeling and association and continues to be eligible under Criteria A/1 and C/3.

Vaca-Dixon-Tesla 500-kV Transmission Line (P-01-0010499)

An approximately 1-mile-long segment of the Vaca-Dixon-Tesla 500-kV Transmission Line (VDTTL) is located within the 0.5-mile-radius architectural history study area. A segment of this line outside the current study area was recorded in 2002 by Foster Wheeler Environmental and in 2023 by Jacobs Engineering Group. The transmission line consists of a variety of pole and tower types dating to the late 1960s. The VDTTL extends for 57 miles from the Vaca-Dixon Substation to the Tesla Substation in Tracy, in Alameda County, California. It is a single-circuit, three-phase, high-voltage transmission line supported by pairs of PG&E-developed inverted U-shaped/H-frame suspension transmission towers. Towers are approximately 140 feet tall with a base width of approximately 55 feet.

This resource was previously recommended ineligible for the CRHR in 2023 by Jacobs Engineering Group, Inc. (Jacobs 2023). It does not appear that the 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.

Under CRHR Criterion 1, the VDTTL does not have important associations with historic events, patterns, or trends of development. This transmission line has general associations with electrical transmission in California, specifically PG&E's post-World War II building campaign that connected PG&E resources to the Pacific Intertie System, a collaboration between private, municipal, and federal utilities to transfer power transregionally between Oregon, California, Nevada, and Arizona. As one 500-kV transmission line north of the Tesla/Tracy Substation carrying Pacific Northwest power to Southern California Edison's network in southern California, the VDTTL embodies one bridge within the broader Pacific AC Intertie system. Its 1967-1969 construction date is late in the developmental period of the Pacific Intertie (1962-1968) and thus does not embody an early example of PG&E's contribution to this network, which starts in 1963. 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 (Cardno 2020:5-8, 5-14). 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. Previously conducted local-level research supplies historical information on individuals considered significant to the region, often including where such individuals lived or worked. The original builder and ongoing owner of the VDTTL is PG&E, the region's primary energy provider; however, research revealed no significant agents, employees, or corporate leaders holding sufficient important association to the VDTTL. 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. Although the PG&E-developed U-shaped/H-frame suspension transmission line reflects a technological innovation in PG&E's EHV transmission, PG&E's transmission facilities, particularly properties without buildings or a part of a building, represent "entirely utilitarian structural" facilities and thus rarely qualify under the

architecturally oriented CRHR Criterion 3. The transmission line dates from 1967–1969 and embodies PG&E's post-World War II (1956–Present) adoption of "purely functional facilities with no overarching language of design." Even from 1931–1956, PG&E adopted a "Depression-inspired economy of construction in generation, transmission, and substation facilities" with "stripped down design and monolithic forms," such that infrastructure built during either period lacks high artistic values or embodiment of a particular type, method, or period of construction (Confidential Appendix 4.5-A). The last component of Criterion 3, representing a significant and distinguishable entity whose components may lack individual distinction, is the most applicable to districts. 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, the VDTTL has neither yielded nor is likely to yield important information about our past. Typical of similar infrastructure, the subject property's construction methods, designs, and materials are well represented within architectural drawings, engineering schematics, photographs, and other sources within the historical record such that it likely would not yield new important information regarding construction or engineering materials, methods, or technologies dating from 1967 to 1969. The subject property is not significant under CRHR Criterion 4.

In conclusion, the VDTTL is not eligible for listing in the 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 PRC, and is not a historical resource for the purposes of CEQA (Confidential Appendix 4.5-A).

Newly Documented Cultural Resources

Vaca-Peabody 230kV Transmission Line

The Vaca-Peabody 230kV Transmission Line is a transmission line located across multiple parcels south of the Vaca-Dixon Substation east of Vacaville. The transmission line spans 9.69 miles along a north-south alignment from the Vaca-Dixon Substation to the Peabody Substation. Agricultural and rural residential uses surround the transmission line within the Project vicinity. Beyond the Project vicinity, the transmission line passes through sparsely populated agricultural and rural residential communities, commercial, and industrial land uses. The line 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.

Under CRHR Criterion 1, the subject property has 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 along newly developed 220-kV transmission lines, then transferred this power along radiating networks of 220-kV lines, including what was then the Vaca-Contra Costa #2 line, to Contra Costa County (Confidential Appendix 4.5-A). Research suggests this line embodies one of the first instances of 220+-kV transmission to the Bay Area and that this transmission line's development resulted in notable population, commercial, or transportation booms in the region, meeting growing demands among California households for power that reached 1,085 kW hours per person by 1920 (Confidential Appendix 4.5-A). The 1920s through the 1930s was a defining moment in PG&E's past to

becoming a leader in western power generation, transmission, and distribution. This transmission line served as one of the first 220-kV transmission lines to connect PG&E's Pit River Hydroelectric System power to emerging markets in the Bay Area, specifically Contra Costa County. The 1920s through the early 1930s was a pivotal period in PG&E's path to become a leader in western power generation, transmission, and distribution. This 230-kV transmission line formed a key component in the growth of PG&E's service network to high-demand areas in the Bay Area, specifically Contra Costa County (Confidential Appendix 4.5-A). As a regional 230-kV transmission line dating to 1926, this transmission line has no strong associations to PG&E's corporate development as a regional utility company nor to any broader community development between Vacaville and the Bay Area. The subject property is significant under CRHR Criterion 1 at the state level of significance with a period of significance of 1926, the year of the line's construction.

Under CRHR Criterion 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 230kV 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is 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. The Vaca-Peabody 230kV Transmission Line transmission line dates to 1926. The 230-kV transmission type and its associated steel lattice tower infrastructure were developed early in the twentieth century, with its voltage and associated infrastructure only becoming an industry standard in 1931 (Confidential Appendix 4.5-A). As such, a 230-kV line erected in 1926 represents an early, extant example of transmission line development at 220 kV, falling within PG&E's period of significance of 1901–1931 (Confidential Appendix 4.5-A). Although an early, extant example of 230-kV transmission maintaining its original function and alignment, the Vaca-Peabody 230-kV line receives ongoing routine maintenance and component upgrades and is composed of elements with a finite lifespan designed for utilitarian upgrades over time. As such, the Vaca-Peabody 230kV Transmission Line does not embody high artistic values exceptional for this property type. Research revealed no known engineer or builder holding important associations with this electrical transmission line. 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 Vaca-Peabody 230kV 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, subject property is recommended as significant under CRHR Criterion 3 at the state level of significance with a period of significance of 1926, the year of the line's construction.

Under CRHR Criterion 4, the subject property has neither yielded nor is 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 CRHR Criterion 4.

The period of significance for the Vaca-Peabody 230kV Transmission Line under Criteria 1 and 3 is 1926, its year of construction, which places the transmission line's construction date within the historic period of significance for PG&E's development of 230-kV transmission infrastructure and growth of its service area (1901–1931; Confidential Appendix 4.5-A). The line's character-defining features include:

- Its location and spatial alignment from the Peabody substation to the Vaca-Dixon Substation,
- Its ongoing relationship to the Peabody substation and Vaca-Dixon substations as a transmission line carrying 230 kV, and
- Its industrial scale, including three pairs of suspended transmission lines, and its repetition of features (e.g., long alignments of utility towers, conductors, and insulators).

The historic boundary for this resource is the full alignment and footprint of the transmission lines from the Vaca-Dixon Substation to the Peabody Substation.

Based on the information presented in the description and CRHR Criteria 1 and 3 discussion above, the subject property is an intact example of its type with few visible alterations. It shows diminished integrity of setting and materials due to residential and commercial development along portions of the line's alignment and ongoing routine maintenance. The resource keeps its original location, design, workmanship, feeling, and association.

In conclusion, the Vaca-Peabody 230kV Transmission Line is recommended individually eligible for listing in the CRHR under Criteria 1 at the state level of significance as an important, extant example of early 230-kV transmission development under PG&E as well as for contributions to community development in the Bay Area. 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 PRC, and is a historical resource for the purposes of CEQA (Confidential Appendix 4.5-A).

7046 Mills Lane – Building/Structure

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 north terminus of Mills Lane and a dirt road that parallels an irrigation canal. The parcel is improved with a residence, accessory structure, shipping container, hardscape and vegetation, and fallow farmland. A rectangular landscaped median and 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. The residence is one story and has an L-shaped plan, vertical wood T1-11 siding, and a mixed gable and hipped roof clad in asphalt shingles. The west elevation has aluminum or vinyl windows. The north, east, and south elevations were not visible from the public right-of-way. A grove of evenly spaced trees is east of this structure.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville (1920–present), Residential Agricultural Properties, and Ranch architecture. Constructed in 1976, the subject parcel falls within the period outlined in the Solano County

Agriculture and Development of Vacaville context; it also features characteristics of a residential agricultural property, specifically, the accessory structure.

Under CRHR Criterion 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. Additionally, the current buildings date to the late twentieth century. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it 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. While the residence does exhibit low and horizontal massing and an L-plan, the building was constructed in 1976 after the Ranch style's prevalent 1940s to 1960s period of significance and does not have features that elevate the building to be an exemplar of the style. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the buildings on the parcel do not 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 CRHR Criterion 4.

7038 Mills Lane – Building/Structure

The parcel at 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, stuccoed siding, and mixed gable and hip roof clad in clay tiles. The west elevation (primary façade) has a central entrance flanked by fieldstone veneer and vinyl windows. The north elevation has vinyl windows. The south elevation has two garage doors. The east elevation was not visible from the public right-of-way. A raised planter with a low concrete block wall is located between the residence, the driveway, and Mills Lane. Mature shrubs, lawns, and trees are located throughout the developed portion of the property. A swimming pool and surrounding hardscape is located east of the residence. A wood structure with a rectangular plan, open air walls, and a gable roof clad in wood shingles is located north of the residence. An accessory structure is

located east of the residence. The structure has a rectangular plan, metal siding, and a gable roof clad in corrugated metal. There is a circular water feature that may be used for agricultural purposes at the east end of the property.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville (1920–present) and Residential Agricultural Properties. Constructed in 1976, the subject parcel falls within the period outlined in the Solano County Agriculture and Development of Vacaville context; it also features characteristics of a residential agricultural property, specifically, the accessory structures east of the residence.

Under CRHR Criterion 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, this property did not contribute to the development of Vacaville as an agricultural center. Additionally, the current buildings date to the late 20th century. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it is not the work of a master architect, builder, designer, or engineer. The subject parcel has a residence built in 1976 and an accessory structure built between 1968 and 1984. The builder and architect are unknown, and the buildings do not represent the best example of their style. The residence was constructed in 1976 likely with features of a common contemporary Spanish Colonial Revival building; however, in the 2000s, it was heavily altered with features more reminiscent of the Spanish Colonial Revival style including stuccoed walls and clay tile roofing. These alterations do not elevate this building to be an exemplar of the style. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the buildings on the parcel do not 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 CRHR Criterion 4.

7028 Byrnes Road – Building/Structure

The parcel at 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, 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.

The residence is setback about 70 feet east from Mills Lane. The vernacular residence, built in 1925, is one story and has an irregular plan, board-and-batten wood siding, and cross gabled roof clad in asphalt shingles. The east elevation (primary façade) faces Byrnes Road and has a central raised entrance with stairs and vinyl double-hung and sliding windows. The north and south elevations each have two vinyl windows. The east elevation was not visible from the public right-of-way. Mature shrubs, lawns, and trees are located throughout the developed portion of the property. Ther is an accessory structure north of the residence with a rectangular plan, wood siding, and gable roof clad in corrugated metal. There is an accessory structure with a rectangular plan, metal siding, and a gable roof clad in metal southeast of the residence. The west elevation has large doors, and the north and south elevations lack fenestration. The east elevation was not visible from the public right-of-way. A vinyl picket fence parallels a portion of the west property line.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville (1920–present), Residential Agricultural Properties, and Vernacular architecture. Constructed in 1925, the subject parcel falls within the period outlined in the Solano County Agriculture and Development of Vacaville context; it also features characteristics of a residential agricultural property, specifically, the accessory structures north and southeast of the residence.

Under CRHR Criterion 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 agricultural development in the area, this property did not contribute to the development of Vacaville as an agricultural center. Additionally, the current buildings date to the late 20th century. Historic aerial photographs depict non-extant buildings that might better have conveyed an association with the features of a residential agricultural property, but those buildings were demolished prior to the construction of the current buildings. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 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 buildings do not represent the best example of their style. While the building does exhibit elements of the vernacular style, including board-and-batten siding likely derived from a mass-produced source and a lack of masonry, the building's simple design does not elevate it to be an exemplar of the style. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the buildings on the parcel do not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late 20th century. The subject property is not significant under CRHR Criterion 4.

6991 Byrnes Road – Building/Structure

The parcel at 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 residence, 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.

A common Ranch-style residence is setback about 100 feet west from Byrnes Road. The residence has an irregular plan, wood T1-11 siding and stuccoed walls, and hipped roof clad in asphalt shingles. The east elevation (primary façade) has a single entrance door, irregularly placed aluminum-framed windows, and two metal automatic garage doors. The roof extends over a breezeway between the garage and main portion of the house. The north, east, and south elevations are not visible from the public right-of-way. There are three accessory structures east of the residence. They are only partially visible from the public right-of-way and appear to have T1-11 siding and gable roofs clad in asphalt shingles.

The property is accessed by a gravel driveway with two entrances off Byrnes Road. The entrances have metal gates between brick piers. A wood fence lines a portion of the west property line. Internal gravel roads provide access to the accessory structures. The property has mature vegetation surrounding the residence and structures and a portion of an irrigation channel running through the northeast corner.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville (1920–present), Residential Agricultural Properties, and Ranch architecture. Constructed in 1968, the subject parcel falls within the period outlined in the Solano County Agriculture and Development of Vacaville context; it also features characteristics of a residential agricultural property, specifically, the accessory structures west of the residence.

Under CRHR Criterion 1, the subject property at 6991 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 date to the late twentieth century. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it 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. While the residence does exhibit low and horizontal massing the building was constructed in 1968 after the Ranch style's prevalent 1940s to 1960s period of significance and does not have features that elevate the building to be an exemplar of the style. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the buildings on the parcel do not 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 CRHR Criterion 4.

6975 Byrnes Road – Building/Structure

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 and all outbuildings are situated in this bump out while the rest of the parcel is occupied by fields. The parcel is enclosed with a metal fence. There is a semi-circular drive leading to the building; it is accessed via metal gates. Structures on the parcel include a large, corrugated metal shed that is open at the ends on the southeast corner of the parcel; two small outbuildings immediately to the west of the shed; a metal windmill between the shed and the outbuildings; and a larger outbuilding immediately behind the residence.

An irregular-plan Ranch-style one-story residential building clad in stucco, constructed in 1976, sits near the southeast corner of the parcel. It has a cross-gable roof with two front-gable volumes at the front elevation and with a front-gable volume at the rear elevation. All roof components have a shallow overhang. The primary entrance is on the primary (east) façade between the two projecting volumes and consists of a flush wooden door behind a metal security gate. It is situated on a sheltered porch accessed by a short stair and enclosed by a metal railing. To the right of the door is a vinyl-sash tripartite window. The projecting volume to the right of the entry porch features a three-part vinyl-sash window. The projecting volume to the left features two vinyl-sash windows. To the left of this projecting volume, there is a segmented garage door. The secondary and rear elevations feature similar windows, and the rear projecting volume features a flush wooden door with a metal security gate.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville (1920–present), Residential Agricultural Properties, and Ranch architecture. Constructed in 1975, the subject building falls within the period outlined in the Solano County Agriculture and Development of Vacaville context; it also features characteristics of a residential

agricultural property, specifically, the outbuildings surrounding the residence. The residence was designed in the Ranch style.

Under CRHR Criterion 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 20th century. Historic aerial photographs depict non-extant buildings that might better have conveyed an association with the features of a residential agricultural property, but those buildings were demolished prior to the construction of the current buildings. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it 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. However, 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. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the subject property's residential construction does not 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 CRHR Criterion 4.

6957 Byrnes Road – Building/Structure

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 an irregular shape, with a small cutout out 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.

A rectangular-plan one-story residential building clad in stucco sits near the center of the parcel. It has a hip roof with two flat portions along the east and south elevations. All roof components have a shallow overhang. The primary entrance is on the façade (east elevation) and consists of a paneled

and glazed door. Fenestration on the façade includes slider and double-hung vinyl-sash windows. The secondary and rear elevations feature similar windows. There are wooden and glazed pedestrian doors on the western and southern elevations. A second rectangular-plan one-story residential building sits just northwest of the primary residential building. It features a side-gable roof and vinyl-sash windows. Its primary entrance faces south and is not visible from the public road.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville (1920–present), Residential Agricultural Properties, and Ranch architecture. Constructed in 1920, the subject building falls within the period outlined in the Solano County Agriculture and Development of Vacaville context; it also features characteristics of a residential agricultural property, specifically, the outbuildings surrounding the residence. The vernacular architectural style reflects the trend of rural builders using standardized construction plans and mass-produced materials to quickly construct residential buildings.

Under CRHR Criterion 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, including the setback position on the parcel, the monitor barn, and what appears to be a secondary residential unit, 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 CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it 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 last component of Criterion C, representing a significant and distinguishable entity whose components may lack individual distinction, is the most applicable to districts. 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the subject property's wood-frame residential construction does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the early 20th century. The subject property is not significant under CRHR Criterion 4.

5405 Kilkenny Road – Building/Structure

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.

A Ranch-style single-family rectangular-plan one-story residential building clad in stucco, constructed in 1975, sits near the southeast corner of the parcel. It has a cross-gable roof with two front-gable topped volume flanking a recessed side side-gable topped volume at center. All roof components have a shallow overhang. The primary entrance is situated at the junction of the left projecting volume and the recessed center volume. It features a wood and glazed door with a side-lite and is capped by a gable peak. The left projecting volume features two vinyl-sash slider windows with wide surrounds. The center volume features two tripartite vinyl-sash windows with wide wood surrounds and featuring a fixed center lite flanked by sliders. The right projecting volume features a segmented roll-up garage door. The secondary and rear elevations feature similar style windows, as well as a sliding glass door on the rear elevation.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville (1920–present), Residential Agricultural Properties, and Ranch architecture. Constructed in 1975, the subject building falls within the period outlined in the Solano County Agriculture and Development of Vacaville context; it also features characteristics of a residential agricultural property, specifically, the outbuildings surrounding the residence. The residence was designed in the Ranch style.

Under CRHR Criterion 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. Prior to the construction of the current building and related outbuildings, the parcel contained only fields; the associated outbuildings almost entirely date to the late 20th century. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it 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. However, 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. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the subject property's residential construction does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late 20th century. The subject property is not significant under CRHR Criterion 4.

5310 Kilkenny Road – Building/Structure

The property at 5310 Kilkenny Road is located on 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 tankhouse.

An irregular-plan two- and one-story residential building clad in rustic siding sits near the center of the parcel. It comprises three volumes: the two-story, rectangular plan, Queen Anne–style volume capped with a hip roof at the front of the lot; a one-story, flat-roofed volume wrapping around the rear of the main building; and a one-story garage topped with a pyramidal roof and a small clock tower immediately to the right of the main volume, connected via the one-story portion of the building.

The most appropriate contexts for the evaluation of this property are Solano County Agriculture and Development of Vacaville and Queen Anne Architecture. Although the subject parcel does not currently encompass any agricultural land, historic maps indicate that it was originally part of a much larger parcel which did previously include farmland. The subject building presents as a Queen Anne–style residence.

Under CRHR Criterion 1, the subject property at 5310 Kilkenny 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. Additionally, the agricultural-related buildings on the property, specifically the barn and tankhouse, are modern, having been constructed within the last 15 years, and do not convey any association with the historic use of the property. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 2, the subject property does not share significant associations with the lives of persons important to history. It is not clear if the property was owned and occupied by Catherine Kilkenny, owner of the parcel in 1880, but regardless, newspaper searches did not reveal any indication that she was significant in the development of the area. The subject property is not significant under CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it is not the work of a master architect, builder, designer, or engineer. The subject building is a Queen Anne–style residence; however, because the original appearance of the building is unknown, it is not clear that it was originally constructed in that style. While the Assessor's construction date of 1937 might be inaccurate based on Block Maps, early topographical maps and Census records, a building constructed at that date would fall outside the period of significance for Queen Anne architecture. Additionally, no builder or architect was identified for the building. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the subject property's wood-frame construction does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late 18th or early 20th centuries. The subject property is not significant under CRHR Criterion 4.

7180 Meridian Road – Building/Structure

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. The parcel is roughly triangular, with frontages along I-80 and Meridian Road. Buildings are clustered in a contained area near the center of the Meridian frontage, with a paved driveway leading to the center of the built area. The rest of the parcel is occupied by fields. The residential building is oriented west toward Meridian Road. Buildings and structures on the parcel include a large, residential building; 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.

An irregular-plan, vernacular-style one-story with attic residential building clad in stucco and constructed at an unknown date sits on the western portion of the parcel. The building appears to have originally been two distinct buildings that have been connected by a gable-topped hyphen at an unknown date. The right-side volume features a hip roof with deep overhangs. The façade is sheltered by this overhang, which covers a porch that spans the width of the façade. There are a variety of window types spanning the façade, as well as the secondary and rear elevations. The left-side volume features a cross-gable roof, with a front gable in the rear portion and a side gable at the front elevation. The side gable has a peaked dormer at the attic level and there is a projecting volume at the front topped with a shallow hip roof. The primary entrance is situated on the right side of the façade, situated within an integral porch. There are a variety of window types on the primary, secondary, and rear elevations, as well as a secondary pedestrian entrance on the rear elevation.

The most appropriate contexts for the evaluation of this property are Residential Agricultural Properties, Solano County Agriculture, and Vernacular architecture. Constructed at unknown dates, the buildings on this property reflect the history of agriculture in Solano County through the position on the parcel and assorted outbuildings. The vernacular architectural style reflects the trend of rural

builders using standardized construction plans and mass-produced materials to quickly construct residential buildings.

Under CRHR Criterion 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. Additionally, the agricultural-related buildings on the property, specifically the tankhouse, are severely dilapidated and do not convey any association with the historic use of the property. Additional buildings that might have further conveyed the site's association with agriculture and residential agricultural development were demolished between 2020 and 2022. The subject property is not significant under CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it 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 last component of Criterion C, representing a significant and distinguishable entity whose components may lack individual distinction, is the most applicable to districts. 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the subject property's residential and agricultural construction does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late 19th or early 20th centuries. The subject property is not significant under CRHR Criterion 4.

5131 Ellsworth Road – Building/Structure

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. The parcel is an irregular pentagon shape, with the southeast corner clipped along Quinn Road. It is entirely paved and features a variety of light-industrial buildings. There is a large water feature occupying the northeast portion of the parcel. The parcel is accessed via driveways on Ellsworth to the south and Quinn to the southeast.

Ten light-industrial metal buildings 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. Most of the buildings are constructed of corrugated metal, with flat or low-pitched gable roofs. Typical

fenestration includes roll-up bays, metal pedestrian doors, and metal sash windows. The two exceptions to this pattern sit at the south and southeast lot lines, facing Ellsworth and Quinn Roads. The larger of these two buildings, labeled 5139 Quinn Road, features multiple commercial storefronts facing the road. Although the secondary elevations are clad in sheet metal, the primary façade is clad in rustic siding and features several glazed pedestrian doors and fixed windows with wide surrounds. This façade is sheltered by a corrugated metal overhang topped with a metal parapet. The second exception is a small roughly rectangular-plan building positioned along the southeast parcel line, labeled 5143 Quinn Road. It is clad in rustic siding and features a four-sided canted bay at the front. It is capped with a front gable roof at the rear and a pyramidal roof at the front. The front portion features deep overhangs. The primary entrance is situated on one of the front facets and features two pedestrian doors, one glazed and one wooded. There are fixed windows on each of the other facets of the bay. Secondary fenestration includes a sliding glass door.

The most appropriate context for the evaluation of this property is light-industrial architecture. The buildings on this parcel are all metal frame light-industrial or commercial structures.

Under CRHR Criterion 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 CRHR Criterion 1.

Under CRHR Criterion 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 CRHR Criterion 2.

Under CRHR Criterion 3, the subject property is not a significant example of its type, style, or era; it lacks high artistic value; and it 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. Due to the utilitarian nature of the buildings and because of the rapid manner in which they were frequently constructed, light-industrial buildings frequently lack a formal style. The builder and architect are unknown, and the buildings do not represent an excellent example of their style. 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 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, the subject property has neither yielded nor is likely to yield important information about our past. Typical of similar buildings, the subject property's metal frame does not have the potential to yield important information regarding construction or engineering materials, methods, or technologies used in the late 20th century. The subject property is not significant under CRHR Criterion 4.

4.5.3.2 CEQA Impact Analysis[12,13]

IMPACT 4.5-1: Would the project cause a substantial adverse change in the significance of a historical resource pursuant to § 15064.5? (Less than Significant Impact)

Based on the background studies and field survey (Confidential Appendix 4.5-A), there are two eligible or potentially eligible resources within the architectural study area: Vaca-Dixon Substation Historic District (P-48-002041) and the Vaca-Peabody 230kV Transmission Line.

The Vaca-Dixon Substation Historic District (P-48-002041) is recommended as eligible for listing in the CRHR under Criteria 1 and 3 under the theme of hydroelectric/electric system development. The proposed BESS would be located approximately 0.8 mile southeast of the substation and would not result in physical, visual, auditory or atmospheric impacts to the District. The proposed gen-tie connection in the northeastern corner of the substation would not physically impact any significant or contributing elements of the District. Any visual impacts would be in keeping with the function of the District as an electrical substation and would be similar to other such connections. As such, the proposed gen-tie connection is not anticipated to result in negative impacts to characteristics of the District that qualify it for listing in the CRHR.

The Vaca-Peabody 230kV Transmission Line is recommended as eligible for listing in the CRHR under Criterion 1 for its association with the development of the Pit River Hydroelectric System and under Criterion 3 as contributing to the Vaca-Dixon Substation Historic District. The Project will not impact characteristics of the resource that qualify it for listing, such as its spatial alignment, function, and industrial scale. There will be no physical alterations to the line, and visual impacts will be in keeping with the existing landscape, which contains multiple transmission lines, including the VDTTL that joins the Vaca-Peabody corridor within the study area. As such, the proposed Project is not anticipated to result in physical, visual, auditory, or atmospheric impacts to character-defining features of the Vaca-Peabody 230kV Transmission Line.

In sum, the Project will not have any direct physical effects on these resources and is not expected to result in significant visual, auditory or atmospheric impacts to characteristics of these resources that qualify then for listing in the CRHR. Therefore, it is recommended that the Project will have no significant impact to a historic or unique resource pursuant to § 15064.5.

IMPACT 4.5-2: Would the project cause a substantial adverse change in the significance of an archaeological resource pursuant to § 15064.5? (Less than Significant Impact)

No archaeological resources were identified within the study area that meet CEQA's definition of a significant archaeological resource pursuant to § 15064.5.

Construction of the Project could potentially impact previously unidentified, buried archaeological resources. Based on the natural setting, landforms, records search results, NAHC SLF results, field survey, known site density, and disturbance to native soils, the study area is assessed as having a low

[12] Appendix B (g) (2) (E) (i)
[13] Appendix B (g) (2)

sensitivity for buried archaeological resources. Despite the low sensitivity, there is a possibility that buried archaeological deposits may be encountered during Project-related subsurface excavation.

To reduce potential impacts associated with potential archaeological resources discoveries during ground-disturbing construction activities, the following Project Design (PD) measures will be implemented as part of the Project Description: **PD CUL-1**, which requires a designated Cultural Resource Specialist (CRS) to be on-call; **PD CUL-2**, which requires worker awareness training regarding tribal and cultural resources; **PD CUL-3**, which requires a cultural resource monitor and a Native American tribal cultural resource monitor; **PD CUL-4**, the inadvertent discovery of cultural resources; and **PD CUL-5**, the inadvertent discovery of human remains. Thus, the Project will have less than significant impacts to historic and archaeological resources with the implementation of **PD CUL-1, PD CUL-2, PD CUL-3, PD CUL-4,** and **PD CUL-5**.

IMPACT 4.5-3: Would the project disturb any human remains, including those interred outside of formal cemeteries? (Less than Significant Impact)

No human remains or cemeteries were identified within the study area as a result of the record searches, NAHC SLF search, and pedestrian field survey. Tribal AB 52 notification will be conducted by the CEC and may result in additional information regarding cemeteries or burials (see Section 4.18, *Tribal Cultural Resources*).

Existing regulations require that, if human remains and/or cultural items defined by Health and Safety Code, Section 7050.5, are inadvertently discovered, all work in the vicinity of the find would cease and the Solano County Coroner would be contacted immediately. If the remains are found to be Native American as defined by Health and Safety Code, Section 7050.5, the coroner will contact the NAHC by telephone within 24 hours.

4.5.3.3 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kV gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of I-80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

Impacts to cultural resources associated with the PG&E facilities were included in the analysis provided above. As such, through the implementation of **PD CUL-1** through **PD CUL-5**, these improvements would not have a substantial adverse effect on any tribal or cultural resources, and no additional mitigation measures would be required.

4.5.4 Cumulative Effects[14]

Cumulative impacts to historic properties consider the impact of the proposed Project in connection with past or related future projects. The CEQA *Guidelines* (CCR, Title 14, Division 6, Article 1, Chapter 3, Section 15000 et seq.) define a cumulative impact as two or more individual effects which, when considered together, are considerable or which compound or increase other environmental impacts. When analyzing cumulative impacts to cultural resources, an assessment is made of impacts on individual resources as well as the inventory of cultural resources within the cumulative impact analysis area. The cumulative area for cultural resources is the study area and the surrounding viewshed. This geographic scope of analysis is appropriate because the cultural resources within this area are expected to be similar to those that occur on the Project site due to their proximity and because the similar environments, landforms, and hydrology would result in similar land-use and resource types.

The study area is adjacent to the Vaca-Dixon Substation, and the general vicinity has been impacted visually by multiple large transmission line corridors. Thus, implementation of the proposed Project is not anticipated to contribute to cumulative impacts to historical resources and will result in a less than significant impact.

Development of the proposed Project, in combination with other cumulative projects in the area, has the potential to contribute to a cumulatively significant cultural resources impact due to the potential loss of historical resources, archaeological resources, and human remains unique to the region. However, PD Measures are included in this application to reduce potentially significant impacts to unknown historical and archaeological resources and human remains that could be encountered during construction of the proposed Project. Implementation of **PD CUL-1** through **PD CUL-5** as discussed in Section 4.5.5, *Mitigation Measures,* will mitigate impacts to cultural resources to be less than significant, and compliance with existing regulations will ensure that any impacts to human remains will be less than significant. In addition, cultural resources that are potentially affected by related or future projects will be subject to the same requirements of CEQA and the laws and regulations discussed above in Section 4.5.3.2, *CEQA Impact Analysis*, and Section 4.5.6, *Laws, Ordinances, Regulations, and Standards*. Therefore, the Project will contribute to a less than significant cumulative impact to cultural resources.

4.5.5 Mitigation Measures[15,16]

No mitigation measures for cultural resource impacts are proposed because the following PD Measures are incorporated into the design of the Project.

PD CUL-1. Designated Cultural Resources Specialist: Prior to Project construction-related, ground disturbing activities (e.g., vegetation removal, excavation, trenching, grading, etc.), the Applicant/Project Owner will retain a designated Cultural Resources Specialist (CRS) who will be available (on-call) during the initial ground disturbance portion of the construction periods to inspect

[14] Appendix B (g) (1)
[15] Appendix B (g) (1)
[16] Appendix B (g) (2) (E), Appendix B (g) (2) (E) (ii), and Appendix B (g) (2) (E) (iii)

and evaluate any finds of buried archaeological resources that might occur during the construction phase. The CRS will meet the Secretary of the Interior's Qualification Standards and Guidelines for Archaeology and Historic Preservation (e.g., someone with a graduate degree in anthropology, history, or cultural resource management and fieldwork experience). The CRS will be qualified, in addition to site detection (precontact and historic), to evaluate the significance of the deposits, consult with regulatory agencies, and plan site evaluation and mitigation activities. The CRS will supervise and direct cultural resource monitors (CRM). The Applicant/Project Owner shall submit the name and qualifications of its designated CRS to the CEC compliance project manager (CPM) for review and approval. The CEC CPM must approve the designated CRS prior to any ground disturbance.

If there is a discovery of archaeological remains during construction, the CRS, in conjunction with the construction superintendent and environmental compliance manager, will make certain that construction activity stops in the immediate vicinity of the find until the find can be evaluated. The CRS will inspect the find and evaluate its potential significance in consultation with CEC staff and the CEC CPM. The CRS will make a recommendation as to the significance of the find and any measures that will mitigate adverse impacts of construction on a significant find.

- If the CRS and CPM determine that the find is significant, the CRS will prepare and conduct a mitigation plan in accordance with state guidelines. This plan will emphasize the avoidance, if possible, of significant archaeological resources. If avoidance is not possible, recovery of a sample of the deposit from which archaeologists can define scientific data to address archaeological research questions will be considered an effective mitigation measure for damage to or destruction of the deposit. The mitigation program, if necessary, will be carried out as soon as possible to avoid construction delays.
- The CRS will arrange for curation of archaeological materials collected during an archaeological data recovery mitigation program. Curation will be performed at a qualified curation facility meeting the standards of the California Office of Historic Preservation. The CRS will submit field notes, stratigraphic drawings, and other materials developed as part of the data recovery/mitigation program to the curation facility along with the archaeological collection, in accordance with the mitigation plan.
- If a data recovery program is planned and implemented during construction as a mitigation measure, the CRS will prepare a detailed scientific report summarizing results of the excavations to recover data from an archaeological site. This report will describe the site soils and stratigraphy, describe and analyze artifacts and other materials recovered, and draw scientific conclusions regarding the results of the excavations. This report will be submitted to the curation facility with the collection.

Once this process has been completed and the proper approvals received, construction within the area of the find can be resumed.

PD CUL-2. Cultural Resource Worker Education/Training[17]: Prior to Project construction-related, ground-disturbing activities (e.g., vegetation removal, excavation, trenching, grading), the designated CRS will prepare a cultural resource worker education awareness program for Project construction personnel. The designated CRS will prepare the initial cultural resource briefing of the worker education awareness program prior to ground-disturbing activities. This training will be provided to each construction worker as part of their environmental, health, and safety training. During construction, the training will be provided to all new construction personnel. The training also will be presented in the form of a written brochure. The cultural resource training will include, but not limited to:

- An overview of applicable laws and penalties pertaining to disturbing cultural resources;
- A brief discussion of the prehistoric and historic regional context and archaeological sensitivity of the area;
- Types of cultural resources found in the area;
- Instruction that Project workers will halt construction if a cultural resource is inadvertently discovered during construction; and
- Procedures to follow in the event an inadvertent discovery (Inadvertent Discovery Plan discussed below) is encountered, including appropriate treatment and respectful behavior of a discovery (e.g., no posting to social media or photographs).

PD CUL-3. Archaeological and Native American Cultural Resource Monitors: Prior to ground-disturbing construction activities, the Applicant will retain a qualified archaeological CRM and a Native American tribal cultural resource monitor (TCRM) to monitor if necessary for the Project. The CRM will work under the supervision of the designated CRS. The TCRM will work in coordination with the CEC, CRS, and CRM. The CRM monitor(s) shall be present during the initial grading and ground disturbing Project site preparation. The potential for encountering buried deposits shall be assessed by the CRS based on the initial subsurface ground-disturbing activities and geoarchaeological sensitivity of the Project site. The initial assessment (in consultation with CEC staff and TCRM) shall prescribe the type and duration for monitoring ground disturbance (i.e., intermittent field checks or on-site full time). The following shall occur during monitoring (including but not limited to):

- The CRM shall conduct archaeological monitoring of construction ground disturbance, as directed by the CRS.
- The CRM shall prepare a daily monitoring log and submit it daily to the CRS via email. The CRS will provide a daily summary to CEC compliance staff. The CRM shall document the construction activity and depth of ground disturbance, name of construction company and staff conducting the ground disturbance, soil profile, any findings and procedures followed, a map illustrated where monitoring occurred on the Project site, and any incidents of non-compliance issues with cultural resources.
- The CRM/TRCM will have the authority to halt or redirect construction in the event of an inadvertent discovery and will follow the protocols outlined in the Inadvertent Discovery Plan (**PD CUL-4**); cultural resource monitoring activities are the responsibility of the CRS. Any

[17] Appendix B (g) (2) (E) (iii)

interference with monitoring activities other than the designated CRS (e.g., removal of a CRM, redirect and relocate monitoring location, etc.) shall be considered in non-compliance.

PD CUL-4. Inadvertent Discovery of Archaeological Resources During Construction: The designated CRS, a Secretary of the Interior-qualified archaeologist (retained by the Applicant/Project Owner), shall prepare an Inadvertent Discovery Plan for the Project. The Inadvertent Discovery Plan will provide protocols and notification procedures in the event of an inadvertent discovery. During Project construction (e.g., ground-disturbing activities, such as vegetation removal, excavation, trenching, grading), should subsurface archaeological resources be discovered, all ground-disturbing activities within 50 feet of the find shall cease and the qualified archaeologist shall be contacted to assess the significance of the find according to CEQA *Guidelines* Section 15064.5. If any find is determined to be significant, the archaeologist shall determine, in consultation with the implementing agencies and any local consulting Native American groups expressing interest, appropriate avoidance measures or other appropriate mitigation. Under CEQA *Guidelines* Section 15126.4(b)(3), preservation in place shall be the preferred means to avoid impacts to archaeological resources qualifying as historical resources. Methods of avoidance may include, but shall not be limited to, Project reroute or redesign or identification of protection measures, such as capping or fencing. Consistent with CEQA *Guidelines* Section 15126.4(b)(3)(C), if it is demonstrated that resources cannot be avoided, the qualified archaeologist shall develop additional treatment measures, such as data recovery or other appropriate measures, in consultation with the implementing agency and any local consulting Native American representatives expressing interest in prehistoric or tribal resources. If an archaeological site does not qualify as a historical resource but meets the criteria for a unique archaeological resource as defined in Section 21083.2, then the site shall be treated in accordance with the provisions of Section 21083.2.

PD CUL-5. Inadvertent Discovery of Human Remains: If human remains are found during any grading or subsurface excavation of the Project site, all activity within a 50-foot radius of the find will be stopped. The Solano County Coroner will be notified as required by the existing California Health and Safety Code (Section 7050.5). The coroner shall determine whether the remains are of Native American origin or whether an investigation into the cause of death is required. If the coroner determines that the find is Native American, he or she must contact the NAHC. The NAHC, as required by PRC Section 5097.98, will identify and notify the Most Likely Descendant. Once NAHC identifies the most likely descendant(s), the descendant(s) will make recommendations as to the disposition of the human remains. Mitigation measures shall comply with the Health and Safety Code, section 7050.5(b).

4.5.6 Laws, Ordinances, Regulations, and Standards[18,19]

4.5.6.1 Federal

There are no applicable federal regulations for this issue area.

[18] Appendix B (i) (1) (A)
[19] Appendix B (g) (2)

4.5.6.2 State

California Environmental Quality Act

CEQA (Section 21084.1) requires a lead agency to determine whether a project could have a substantial adverse change in the significance of a historical resource or tribal cultural resource (PRC Section 21074 (a)(1)(A)-(B)).

Under CEQA (Section 15064.5 (a)), a historic resource (e.g. building, structure, or archaeological resource) shall include a resource listed in, or determined to be eligible for listing in, the CRHR; or a resource listed in a local register or landmark, identified as significant in a historical resource survey (meeting the requirements of Section 5024.1(g) of the PRC); or any object, building, structure, site, area, place, record, or manuscript that 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 (Section 15064.5(a)(3)). Under the CCR, Title 14, Chapter 11.5, properties listed on or formally determined to be eligible for listing in the NRHP are automatically eligible for listing in the CRHR. A resource is generally considered to be historically significant under CEQA if it meets the following criteria for listing in the CRHR (PRC SS5024.1, Title 14, CCR, Section 4852):

A. Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California or the United States (Criterion 1).
B. Associated with the lives of persons important to local, California, or national history (Criterion 2).
C. Embodies the distinctive characteristics of a type, period, region, or method of construction or represents the work of a master or possesses high artistic values (Criterion 3).
D. Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California, or the nation (Criterion 4).

Under PRC Section 21074, tribal cultural resources are:

1. *Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:*
    a. *Included or determined to be eligible for the inclusion in the CRHR; or*
    b. *Included in a local register of historical resources as defined by subdivision (k) of Section 5020.1 (designated or recognized historically significant by a local government pursuant to local ordinances or resolution).*
2. *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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.*

a. A cultural landscape that meets the criteria of subdivision (a) is a tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape; or

b. A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a tribal cultural resource if it conforms with the criteria of subdivision (a).

California Health and Safety Code, Sections 7052 and 7050.5

Section 7052 of the California Health and Safety Code states that it is a felony to disturb Native American burials. Section 7050.5(c) requires that construction or excavation be stopped in the vicinity of discovered human remains until the coroner can determine whether the remains are those of a Native American. If determined to be Native American, the coroner must contact the NAHC.

California Native American Historical, Cultural, and Sacred Sites Act

The California Native American Historical, Cultural, and Sacred Sites Act applies to both state and private lands. The Act requires that, upon discovery of human remains, construction or excavation activity must cease and the county coroner be notified. If the remains are Native American, the coroner must notify the NAHC. The NAHC will then identify and notify a most likely descendant. The Act stipulates the procedures that the most likely descendant may follow for treating or disposing of the remains and associated grave goods.

California Public Resource Code, Sections 5097 et seq.

California PRC Section 5097 specifies the procedures to be followed in the event of an unexpected discovery of human remains on non-federal land. The disposition of Native American remains falls within the jurisdiction of the NAHC. Section 5097.5 of the PRC states:

> *No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor.*

As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state or any city, county, district, authority, public corporation, or any agency thereof.

Assembly Bill 52

Under CEQA, AB 52 requires a lead agency to consult with any California Native American Tribe that requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. Consultations must include discussing the type of environmental review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the Tribe. That consultation must take place prior to the determination of whether a negative declaration, mitigated negative

declaration, or Environmental Impact Report is required for a project. Section 4.18, *Tribal Cultural Resources*, discusses the effort made to contact the Tribes that may have an interest in the Project, in compliance with AB 52.

4.5.6.3 Local

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.*

The following implementation program pertains to cultural and tribal cultural resources:

- ***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 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*
    - *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.*

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 Goal COS-6, Protect and enhance cultural resources for their aesthetic, scientific, educational, and cultural values (COS-22 to COS-23):

- ***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.*

4.5.7 Agencies and Agency Contacts[20,21]

Table 4.5-3. Agency Contacts for Cultural Resources

Agency	Contact	Permit/Issue
Native American Heritage Commission	Native American Heritage Commission 1550 Harbor Blvd, Suite 100 West Sacramento, CA 95691 (916) 373-3710; Fax: (916) 373-5471 nahc@nahc.ca.gov	Native American tribal and traditional cultural resources or properties. Native American human remains.
California Office of Historic Preservation	Julianne Polanco, State Historic Preservation Officer 1725 23rd Street, Suite 100 Sacramento, CA 95816 info.calshpo@parks.ca.gov	CEQA and Section 106 of the NHPA compliance.
Solano County	James Bezek, Director Dept. of Resource Management, Planning Division 675 Texas Street, Suite 5500 Fairfield, CA 94533 (707) 784-6765 RMHelp@SolanoCounty.com	County cultural resources policies. County Planning Commission conducts hearings and to make findings and recommendations to the Board of Supervisors pertaining to environmental documents.
City of Vacaville	Peyman Behvand, Planning Manager Community Development 650 Merchant St. Vacaville CA 95688 (707) 449-5332 CommunityDevelopment@cityofvacaville.com	City cultural resources policies.

[20] Appendix B (i) (1) (B)
[21] Appendix B (i) (2)

4.5.8 Required Permits and Permitting Schedule[22]

Other than certification by the CEC, no state, federal, or local permits are required for management of cultural resources.

4.5.9 References[23]

Adams, Jeremy (Cardno ENTRIX). 2011. P-48-001604, Department of Parks and Recreation form 523. On file at the Northwest Information Center, Rohnert Park, California.

Baker, Cindy, and Tracy Bakic. 2002. *National Register of Historic Places Evaluation of the Vaca-Dixon Substation, Solano County, California*. PAR Environmental Services, Inc., Sacramento.

Cardno. 2020. Pacific Gas and Electric Company Historic-Era Electrical Infrastructure Management Plan. Prepared by Cardno for Pacific Gas & Electric Company, San Francisco, CA.

Cardno ENTRIX. 2012. Vaca Dixon-Lakeville 230kV Reconductoring Project, Sonoma, Napa, and Solano Counties, Historical and Architectural Investigations for the Transmission Lines and Lakeville Substation.

City of Vacaville. 2015. City of Vacaville General Plan. Available online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents (accessed August 2024).

Holland, Lora, and Jennifer Sanka. 2013. P-48-000178 Update Form. Atkins, San Fransisco.

Jacobs (Jacobs Engineering Group, Inc.). 2023. Kola Interconnect Battery Energy Storage Project, Alameda County, California. Prepared for Jola Interconnect, LLC. July. Sacramento, California.

Meyer, Jack, and Jeffrey Rosenthal. 2007. Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4. Prepared for Caltrans District 4, 2007.

Solano County. 2008. Solano County General Plan. Approved November 4, 2008. Available online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp (accessed August 2024).

[22] Appendix B (i) (3), Appendix B (i) (1) (B)
[23] Appendix B (g) (1)

4.6 Energy

This section identifies and evaluates issues related to energy that could occur as a result of implementation of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. A Project-specific energy evaluation was completed using information from the Air Quality and Greenhouse Gas Emissions Analysis for the Project, included as Appendix 4.3-A to this application. The results of the energy evaluation are included below.

The Project is a battery energy storage system (BESS; not a traditional thermal energy project[1]) to be constructed on a privately owned parcel in unincorporated Solano County, California. Once completed, the BESS will provide up to 300 megawatts (MW) of electricity with an energy output of 1,200 megawatt-hours; actual discharge amount and timing would be determined by the California Independent System Operator.[2]

4.6.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation?			X	
2.	Conflict with or obstruct a state or local plan for renewable energy or energy efficiency?				X

4.6.2 Affected Environment[3]

This section provides an evaluation of existing energy production and consumption conditions and potential energy use and related impacts from the Project. Total energy usage in California was 6,882 trillion British thermal units (Btu) in 2022 (the most recent year for which specific data are available) (EIA 2024), which equates to an average of 176 million Btu per capita (EIA 2024). These figures place California second among the nation's 50 states in total energy use and 49th in per capita consumption (EIA 2024).

[1] Appendix B (h) (4) (A), Appendix B (h) (4) (B), Appendix B (h) (4) (C), Appendix B (h) (4) (E)
[2] Appendix B (h) (4) (D)
[3] Appendix B (g) (1)

4.6.2.1 State Energy Supply

Electricity needs in California are satisfied by various entities, including publicly owned utilities, investor-owned utilities, electric service providers, and choice aggregators. In 2022 (the last year for which updated information is available), total system electricity generation for California was 287,220 gigawatt-hours (GWh), up 3 percent from 2021's total generation of 277,764 GWh. In 2022, California's in-state electricity generation was derived from natural gas (36.4 percent); coal (2.2 percent); oil and coal (less than 1 percent); and renewable resources that include nuclear, geothermal, biomass, hydroelectric resources, wind, and solar (54.2 percent). Of the approximately 155,747 GWh generated from renewable sources in the state, solar-generated electricity made up the highest proportion (17 percent), followed by wind (10.8 percent), large hydroelectric (9.2 percent), nuclear (9.2 percent), and geothermal (4.7 percent) (CEC 2024a).

4.6.2.2 Local Energy Supply—Pacific Gas and Electric

Pacific Gas and Electric (PG&E) is an investor-owned utility company that provides electricity supplies and services to approximately 16 million people throughout a 70,000-square-mile service area that includes Solano County and extends from Eureka in the north to Bakersfield in the south, and from the Pacific Ocean in the west to the Sierra Nevada mountains in the east (PG&E 2024a).

PG&E provides electricity to the 6 million customers in its service territory, including residential, commercial, industrial, and agricultural consumers. In 2023, PG&E generated and/or procured a total of 26,018 GWh of electricity (PG&E 2024b).[4] Of this total, PG&E owns approximately 7,820 MW of generating capacity (see Table 4.6-1). The remaining electrical power is purchased from other sources inside and outside of California.

Table 4.6-1. PG&E – Owned Electricity Generating Sources (2023)

Source	Generating Capacity (MW)
Nuclear (Diablo Canyon - 2 reactors)	2,240
Hydroelectric	3,845
Fossil Fuel-Fired	1,400
Battery Energy Storage System (BESS)	183
Solar Photovoltaic (13 units;12 in Fresno County, 1 in Kings County)	152
Total	**7,820**

Source: PG&E 2024b

In Solano County, approximately 3,255.4 GWh of electricity were consumed in 2022, with approximately 2,105.8 GWh consumed by non-residential uses (CEC 2024b).

4.6.2.3 Local Energy Infrastructure

There are no other utility-scale BESS facilities in Solano County. The proposed Project will involve construction and operation of a 300-MW BESS facility. The BESS facility components will connect to

[4] This amount excludes electricity provided to direct access customers and Community Choice Aggregation (CCA) entities who procure their own supplies of electricity.

PG&E's existing Vaca-Dixon Substation via a 230-kilovolt (kV) generation tie (gen-tie) line to distribute electricity to customers within the local and regional grid by PG&E. The proposed Project will operate year-round.

4.6.2.4 Transportation Fuels

Energy use associated with automobiles and trucks includes the consumption of gasoline and diesel fuel, which are nonrenewable energy products derived from crude oil, which in turn is derived from petroleum. Energy is also consumed in connection with construction and maintenance of transportation infrastructure used by automobiles and trucks. Passenger cars and light-duty trucks are by far the largest consumers of transportation fuel. Retail sales of transportation fuel in California totaled 13.6 billion gallons of gasoline and 2.3 billion gallons of diesel in 2022 (CEC 2024c). The CEC estimates that 190 million gallons of gasoline were sold in 2022 in Solano County (CEC 2024c).

4.6.3 Environmental Analysis[5]

4.6.3.1 Impact Analysis Methodology[6]

Construction and operational energy use were calculated based on on-road vehicle trips and distances and the off-road equipment use as described in Section 4.3, *Air Quality*. Fuel consumption factors in terms of gallon of diesel and gasoline per mile travel were calculated from the California Air Resources Board (CARB) Mobile Source Emissions Inventory online database – EMFAC2017 version 1.0.2 (CARB 2020). Fuel consumption factors in terms of gallons per hour of diesel for off-road equipment were calculated using data from the CARB Mobile Source Emissions Inventory online database – OFFROAD2017 version 1.0.1 (CARB 2020). The conversion factor for diesel is 10.21 kilograms of carbon dioxide (CO_2) per gallon and 8.78 kilograms CO_2 per gallon for gasoline (The Climate Registry 2024).

4.6.3.2 CEQA Impact Analysis

IMPACT 4.6-1: Would the project result in potentially significant environmental impact due to wasteful, inefficient, or unnecessary consumption of energy resources, during project construction or operation? (Less than Significant Impact)

Construction

Construction equipment will comply with federal, state, and regional requirements where applicable. With respect to truck fleet operators, the U.S. Environmental Protection Agency (USEPA) and National Highway Traffic Safety Administration have adopted fuel efficiency standards for medium- and heavy-duty trucks. The Phase 1 heavy-duty truck standards apply to combination tractors, heavy-duty pickup trucks and vans, and vocational vehicles for model years 2014 through 2018 and result in a reduction in fuel consumption from 6 to 23 percent over the 2010 baseline, depending on the vehicle type. The USEPA and the National Highway Traffic Safety Administration also adopted the Phase 2 heavy-duty truck standards, which cover model years 2021 through 2027 and require the phase-in of a 5 to 25 percent reduction in fuel consumption over the 2017 baseline depending on the compliance

[5] Appendix B (g) (1)
[6] Appendix B (h) (4) (B)

year and vehicle type. These regulations will have an overall beneficial effect on reducing fuel consumption from trucks over time as older trucks are replaced with newer models that meet the standards.

In addition, construction equipment and trucks are required to comply with CARB regulations regarding heavy-duty truck idling limits of 5 minutes at a location and the phase-in of off-road emission standards that result in an increase in energy savings in the form of reduced fuel consumption from more fuel-efficient engines. These regulations are intended to reduce criteria pollutant emissions; however, compliance with the anti-idling and emissions regulations will also result in the efficient use of construction-related energy.

Fuel consumption from construction equipment was estimated by converting the total CO_2 emissions from the construction phase to gallons using conversion factors for CO_2 to gallons of diesel. The Project will generate 2,202 metric tons of CO_2 during construction (Appendix 4.3-A) and the conversion factor for diesel is 10.19 kilograms CO_2 per gallon (The Climate Registry 2024). The estimated total diesel fuel use from construction equipment is 216,094 gallons. During 2022, the State of California consumed approximately 2.3 billion gallons of diesel (CEC 2023). Therefore, fuel consumption from construction equipment would not be considered wasteful, inefficient, or unnecessary.

The Project will also consume electricity during construction through groundwater pumping if the Project secures water via a new onsite groundwater well. Two options are currently under consideration for water supply, either a new groundwater well or water supplied from Solano Irrigation District. Refer to Section 4.10, *Hydrology and Water Quality*, and Section 4.19, *Utilities and Service Systems,* for additional information on water supply. A new groundwater well would consume approximately 14.5 MWh of electricity during Project construction, which is assumed to occur in one year. No significant water use or subsequent energy consumption from groundwater pumping would occur during Project operation as no operational water is required for the Project. Therefore, energy use during Project construction would not be considered wasteful, inefficient, or unnecessary. Impacts will be less than significant.

Operations

The Project will assist the state of California in achieving or exceeding its Renewable Portfolio Standard (RPS) and greenhouse gas (GHG) emissions reduction objectives by developing and constructing a new California BESS to store renewable energy, which also will help in achieving or exceeding its energy storage mandates. Net consumption of electricity associated with efficiency loss of equipment will be negligible during operation of the Project.

Fuel consumption from operations is expected to be low, as the facility will be unstaffed and will require limited vehicle usage for operations and maintenance (O&M) activities.

Operation of the Project will generate GHG emissions through motor vehicle trips to and from the Project site, occasional use of heavy-duty trucks, waste generation, and electricity use. The Project will emit 3.42 metric tons of CO_2 (3,420 kilograms) annually during operations, as calculated in the Air Quality and Greenhouse Gas Emissions Analysis for the Project, included as Appendix 4.3-A to this application. Based on the conversion factors for CO_2 to gallons of gasoline (8.78 kilograms CO_2 per

gallon; The Climate Registry 2024), the activities associated with operation of the Project are estimated to consume a total of 390 gallons of gasoline per year, conservatively assuming all operational fuel use is by gasoline powered vehicles. By comparison, the amount of petroleum consumed in the state of California during 2022 included 13.6 billion gallons of gasoline (CEC 2023). As a battery storage project that absorbs energy during periods of increased energy production and releases energy during peak demands for energy, the Project will have a positive effect on the peak and base period system demands for electricity.

While energy is stored within the BESS, the Project will also consume electricity to power onsite equipment, herein referred to as the auxiliary load. The Project's auxiliary load will consume approximately 24,840 MWh of electricity per year. However, considering the overall purpose of the BESS is to stabilize the energy grid and store renewable energy for use during hours of peak demand to reduce the need for fossil fuel energy generation, energy use by the auxiliary load of the Project would not be considered wasteful, inefficient, or unnecessary consumption of energy resources.

As a result, the proposed Project will not result in potentially significant environmental impacts due to wasteful, inefficient, or unnecessary consumption of energy resources during Project construction or operation. Impacts will be less than significant.

IMPACT 4.6-2: Would the project conflict with or obstruct a state or local plan for renewable energy or energy efficiency? (No Impact)

The proposed Project will assist the State of California in achieving or exceeding its RPS and GHG emissions reduction objectives by developing and constructing a new California BESS to store renewable energy, which will also help the state in achieving or exceeding its energy storage mandates. The Project will enable and not conflict with or obstruct a state or local plan for renewable energy or energy efficiency.

4.6.3.3 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1.0, *Executive Summary*. The PG&E facilities are described in further detail in Section 3.0, *Electrical Transmission*.

These improvements are included in the analysis above, such that they will not be significant to the environment. Thus, the improvements will not be wasteful or cause unnecessary usage of energy. Additionally, the PG&E improvements will not conflict with any plans or policies for renewable energy or energy efficiency. No mitigation will be required.

4.6.4 Cumulative Effects[7]

There will be no impact with respect to conflicts with or obstructions to a state or local plan for renewable energy or energy efficiency. Therefore, the Project will not cause or contribute to any potential significant cumulative impact related to these conflicts.

The Project will use energy resources during construction and O&M; therefore, it could contribute to potential cumulative impacts during any of these phases.

The Project will improve grid reliability that could serve the cumulative demand such that the Project will not contribute to or worsen an existing significant adverse condition. The Project will assist California utilities in meeting their obligations under state energy storage targets and the California Public Utilities Commission's energy storage program. No significant adverse cumulative effect will result relating to electricity use; instead, a beneficial cumulative impact on energy resources will result.

The geographic context for potential cumulative impacts related to vehicle fuel use is within the Project's construction equipment delivery and workers' average travel radius, since these are the areas within which energy resources will be demanded and supplied for the Project. Project construction and operations will not result in a long-term increase in the number of trips or increase the overall vehicle miles traveled in the area.

There is no existing significant adverse condition of fuel use (such as a shortage) to which the Project will contribute or worsen. Past, present, and reasonably foreseeable future projects within the vicinity of the Project site could require gasoline or diesel, but will not combine with the fuel demands of the Project to cause a significant adverse cumulative impact relating to the wasteful, inefficient, or unnecessary consumption or use of fuel. In the event of a future fuel shortage, higher fuel prices will reduce trips that could be termed "wasteful" and will moderate choices regarding vehicles, equipment, and fuel efficiency. The Project's less than significant impact relating to wasteful, inefficient, or unnecessary consumption or use of fuel will not be cumulatively considerable.

4.6.5 Mitigation Measures[8]

No mitigation measures are required.

4.6.6 Laws, Ordinances, Regulations, and Standards[9]

4.6.6.1 Federal

National Energy Conservation Policy Act

The National Energy Conservation Policy Act (42 United States Code [U.S.C.] § 8201 et seq.) provides federal energy management goals and requirements. The National Energy Conservation Policy Act establishes energy efficiency standards for new construction.

[7] Appendix B (g) (1)
[8] Appendix B (g) (1)
[9] Appendix B (i) (1) (A)

National Energy Policy Act of 2005

The National Energy Policy Act of 2005 (42 U.S.C. § 13201 et seq.) sets equipment energy efficiency standards and provides incentives to reduce current demand on nonrenewable energy resources. For example, the act provides for federal tax credits for purchasing fuel-efficient appliances, hybrid vehicles, and constructing energy efficient buildings. The act includes incentives for renewable energy production, including solar power.

Energy Independence and Security Act of 2007

The Energy and Independence Security Act of 2007 (42 U.S.C. § 17001) includes key provisions related to fleet vehicle fuel economy, renewable fuel standard goals, including ethanol and other advanced biofuels, and appliance and lighting efficiency standards.

Inflation Reduction Act of 2022

The Inflation Reduction Act (IRA) of 2022 will make the single largest investment in climate and energy in American history. The IRA enables the U.S. to tackle the climate crisis, advance environmental justice, secure the United States' position as a world leader in domestic clean energy manufacturing, and put the U.S. on a pathway to achieving the Biden Administration's climate goals, including a net-zero economy by 2050.

4.6.6.2 State

Warren-Alquist Act

The 1975 Warren-Alquist Act (Public Resources Code § 25000 et seq.) established the California Energy Resources Conservation and Development Commission, now known as the CEC. The act established a state policy to reduce wasteful, uneconomical, and unnecessary uses of energy by employing a range of measures.

Renewables Portfolio Standard

California's RPS Program was enacted in 2002 with Senate Bill (SB) 1078 and accelerated in 2006, requiring investor-owned utilities to obtain 20 percent of their electric supply from renewable energy sources, such as solar, by 2010. On April 12, 2011, Governor Brown signed SB 2X, requiring California retail electric providers, such as PG&E, to procure 33 percent of their retail energy sales from eligible renewable sources by 2020. In October 2015, Governor Brown signed into legislation SB 350, which requires retail sellers and publicly owned utilities to procure 50 percent of their electricity from eligible renewable energy resources by 2030 (CPUC 2021a).

On September 10, 2018, Governor Brown signed SB 100 establishing that 100 percent of all electricity in California must be obtained from renewable and zero-carbon energy resources by December 31, 2045. SB 100 also created new standards for the RPS goals that were established by SB 350 in 2015. Specifically, the bill increases required energy from renewable sources for both investor-owned and publicly owned utilities from 50 percent to 60 percent by 2030. Incrementally, these energy providers also are required to have a renewable energy supply of 33 percent by 2020, 44 percent by 2024, and 52 percent by 2027. The updated RPS goals are considered achievable, since many California energy providers are already meeting or exceeding the RPS goals established by SB 350. Governor Brown

signed Executive Order B-55-18 with a new statewide goal to achieve carbon neutrality (zero-net GHG emissions) by 2045 and to maintain net negative emissions thereafter.

On September 16, 2022, Governor Newsom signed SB 1020, the Clean Energy, Jobs, and Affordability Act, which adds interim targets to the policy framework originally established in SB 100. The interim targets require renewable energy and zero-carbon resources to supply 90 percent of all retail electricity sales by 2035, and 95 percent of all retail electricity sales by 2040. The bill also requires all state agencies to rely on 100 percent renewable energy and zero-carbon resources to power their own facilities by 2035 and encourages better information sharing and coordination between agencies for transmission planning.

Energy Storage

Assembly Bill (AB) 2514, passed in 2010, resulted in the California Public Utilities Commission setting a 1,325-MW storage target by 2020 for investor-owned utilities. The three major investor-owned utilities in the state, including PG&E, have exceeded the AB 2514 target of 1,325 MW. AB 2868, passed in 2016, requires California's three major investor-owned utilities to propose programs and investments for up to an aggregate 500 MW (166.6 MW each) of distributed energy storage systems, above and beyond the 1,325-MW target for energy storage (CPUC 2021b).

Energy Efficient Building Standards

The Energy Efficiency Standards for Residential and Nonresidential Buildings specified in Title 24, Part 6, of the California Code of Regulations include requirements for non-residential building lighting, insulation, ventilation, and mechanical systems (CEC 2018). Its provisions will be relevant to the Project's proposed O&M building.

The California Green Building Standards Code (Title 24, Part 11) is a statewide regulatory code for all buildings. This code is intended to encourage more sustainable and environmentally friendly building practices, require use of low-pollution emitting substances that cause less harm to the environment, conserve natural resources, and promote the use of energy-efficient materials and equipment (CBSC 2019).

4.6.6.3 Local

Solano County General Plan

The Solano County General Plan includes the following goals, policies, and implementation measures that are relevant to the Project, and specifically to energy. Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable County General Plan goals, policies, and implementation measures as related to energy.

Land Use Element

> ***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.*

Resources Element

Goal RS.G-5: *Ensure availability of affordable energy supplies and require efficiency and conservation measures to minimize energy consumption.*

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-54: *Reduce Solano County's reliance on fossil fuels for transportation and other energy-consuming activities.*

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.*

Policy RS.P-58: *Require the siting of energy facilities in a manner compatible with surrounding land uses, including Travis Air Force Base, and in a manner that will protect scenic resources.*

City of Vacaville General Plan

The City of Vacaville General Plan includes the following goals, policies, and actions that are relevant to the gen-tie line, and specifically to air quality. Refer also to Section 4.11, *Land Use and Planning*, of this application for additional information regarding land use consistency, and for a consistency analysis with applicable City General Plan goals, policies, and actions as related to air quality.

Conservation and Open Space Element

Goal COS-10: *Promote a sustainable energy supply.*

Policy COS-P10.1: *Encourage the development of energy generated by renewable fuel sources within the city, provided that significant adverse environmental impacts associated with such development can be successfully mitigated.*

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*

Safety Element

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 onsite resilience. Support financing efforts to increase community access to these features.*

4.6.7 Agencies and Agency Contacts[10]

As there are no required permits related to energy and, as a result, no responsible agencies, agencies and agency contacts are not provided.

4.6.8 Required Permits and Permitting Schedule[11]

As there are no required permits related to energy, required permits and a permitting schedule are not provided.

4.6.9 References[12]

CARB (California Air Resources Board). 2020. Emissions Inventory Tool for On-road and Off-road Emissions Rates (EMFAC). Available online at: https://arb.ca.gov/emfac/emissions-inventory/ (accessed September 2024).

CBSC (California Building Standards Commission). 2019. CALGreen (California Code of Regulations, Title 24, Part 11). Available online at: http://www.bsc.ca.gov/Home/CALGreen.aspx (accessed September 2024).

CEC (California Energy Commission). 2018. 2019 Nonresidential Compliance Manual for the 2019 Building Energy Efficiency Standards, Title 24, Part 6, and Associated Administrative Regulations in Part 1. December. Available online at: https://www.energy.ca.gov/sites/default/files/2021-06/CEC-400-2018-020-CMF_0.pdf (accessed September 2024).

CEC. 2023. Gasoline Sales Statistics. Available online at: https://www.energy.ca.gov/media/3874 (accessed September 2024).

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CPUC. 2021b. Energy Storage. Available online at: https://www.cpuc.ca.gov/industries-and-topics/electrical-energy/energy-storage (accessed September 2024).

[10] Appendix B (i) (2)
[11] Appendix B(i) (1) (B) and Appendix B (i) (3)
[12] Appendix B (g) (1)

EIA (U.S. Energy Information Administration). 2024. California State Energy Profile. May 16. Available online at: https://www.eia.gov/state/print.php?sid=CA (accessed September 2024).

PG&E (Pacific Gas and Electric Company). 2024a. Company Profile. Available online: https://www.pge.com/en/about/company-information/company-profile.html.). (accessed September 2024).

PG&E. 2024b. 2023 Joint Annual Report to Shareholders. Available online: https://s1.q4cdn.com/880135780/files/doc_financials/2024/ar/2023-Annual-Report-Master-from-10-K-web-ready-032524.pdf. (accessed September 2024).

The Climate Registry. 2024. Default Emission Factors. Available online at: https://theclimateregistry.org/wp-content/uploads/2024/03/2024-Emission-Factor-Document_FINAL.pdf (accessed September 2024).

4.7 Geology, Soils, and Paleontological Resources

This section identifies and evaluates issues related to geology, soils, and paleontological resources in the context of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines. In addition, this discussion also addresses California Environmental Quality Act (CEQA) considerations. It provides a description of the physical and regulatory setting pertinent to these specific resources, the criteria used to evaluate significance of impacts, the methods used in evaluating these impacts, and the results of the impact assessment[1].

4.7.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	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.			X	
	ii) Strong seismic ground shaking?			X	
	iii) Seismic-related ground failure, including liquefaction?			X	
	iv) Landslides?			X	
2.	Result in substantial soil erosion or the loss of topsoil?			X	
3.	Be located on a geologic unit 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?			X	
4.	Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property?			X	
5.	Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water?			X	
6.	Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?			X	

4.7.2 Affected Environment

4.7.2.1 Regional Geology

The Project site is located on the western side of the southern end of the Sacramento Valley, which constitutes the northern third of the Great Valley geomorphic province (Figure 4.7-1). The Great Valley geomorphic province is a mostly intact (i.e., with limited deformation in the central areas),

[1] Appendix B (g) (1)

asymmetric structural trough that has been filled with thick sequences of sediment deposits that range in age from the Jurassic to the Holocene. The sequences are broadly categorized into an older (Mesozoic) Great Valley Sequence and a younger (Cenozoic) Great Valley fill (CGS 2002; Harden 2004).

The Sacramento Valley slopes to the south, where the Sacramento River flows into the Sacramento-San Joaquin Delta area. Sediments which fill the trough have been derived mainly from igneous rocks of the mountains of the Sierra Nevada geomorphic province to the east, and to a minor extent from various rock types in the mountains of the Coast Ranges geomorphic province to the west. Major rivers flowing west out of the Sierra Nevada province carried most of the deposited sediment, while smaller rivers draining the east side of the Coastal Ranges contributed a minor amount (Harden 2004).

4.7.2.2 Local Geology[2]

The most recent geologic mapping for the area surrounding the Project site is included on a 1:100,000 scale map for the Lodi quadrangle. The primary geologic units shown in the area include sedimentary deposits from the Holocene, Pleistocene, and Pliocene epochs (see Table 4.7-1). Being relatively recent deposits (within the last 3 million years), most of these sediments are unconsolidated to poorly consolidated. All of these geologic units are fresh water (i.e. non-marine) sediments laid down primarily in an alluvial fan environment where the valley edge abuts the mountains that provided a source of sediments (Dawson 2009). Figure 4.7-2 shows the geologic units of the Project area. This location falls within the Great Valley fault zone which generally aligns with the boundary between the Great Valley and Coast Ranges geomorphic provinces and includes the Gordon Valley, Pittsburg-Kirby Hills, and Midland faults. At their closest points these faults lie within 5 to 10 miles of the Project site (see Figure 4.7-1).

Table 4.7-1. Geologic Units in the Vicinity of the Project Site

ID	Age	Description
Quaternary		
Qhly	latest Holocene (less than 1,000 years)	**Alluvial Fan Levee Deposits.** Natural levee deposits of latest Holocene alluvial fans.
Qhf	Holocene	**Alluvial Fan Deposits.** Sediment deposited by streams emanating from the mountains as debris flows, hyper- concentrated mudflows, or braided stream flows. Sediments include sand, gravel, silt and clay, that are moderately to poorly sorted, and moderately to poorly bedded; Qhff - fine-grained facies.
Qpf	latest Pleistocene	**Alluvial Fan Deposits.** Sand, gravel, silt, and clay that is moderately to poorly sorted and bedded. Similar to Holocene fans (Qhf), but they are more dissected.
Pth	Pliocene	**Tehama Formation.** Poorly consolidated, non-marine, gray to maroon siltstone, quartz arenite sandstone, tuff, and pebble to cobble conglomerate.

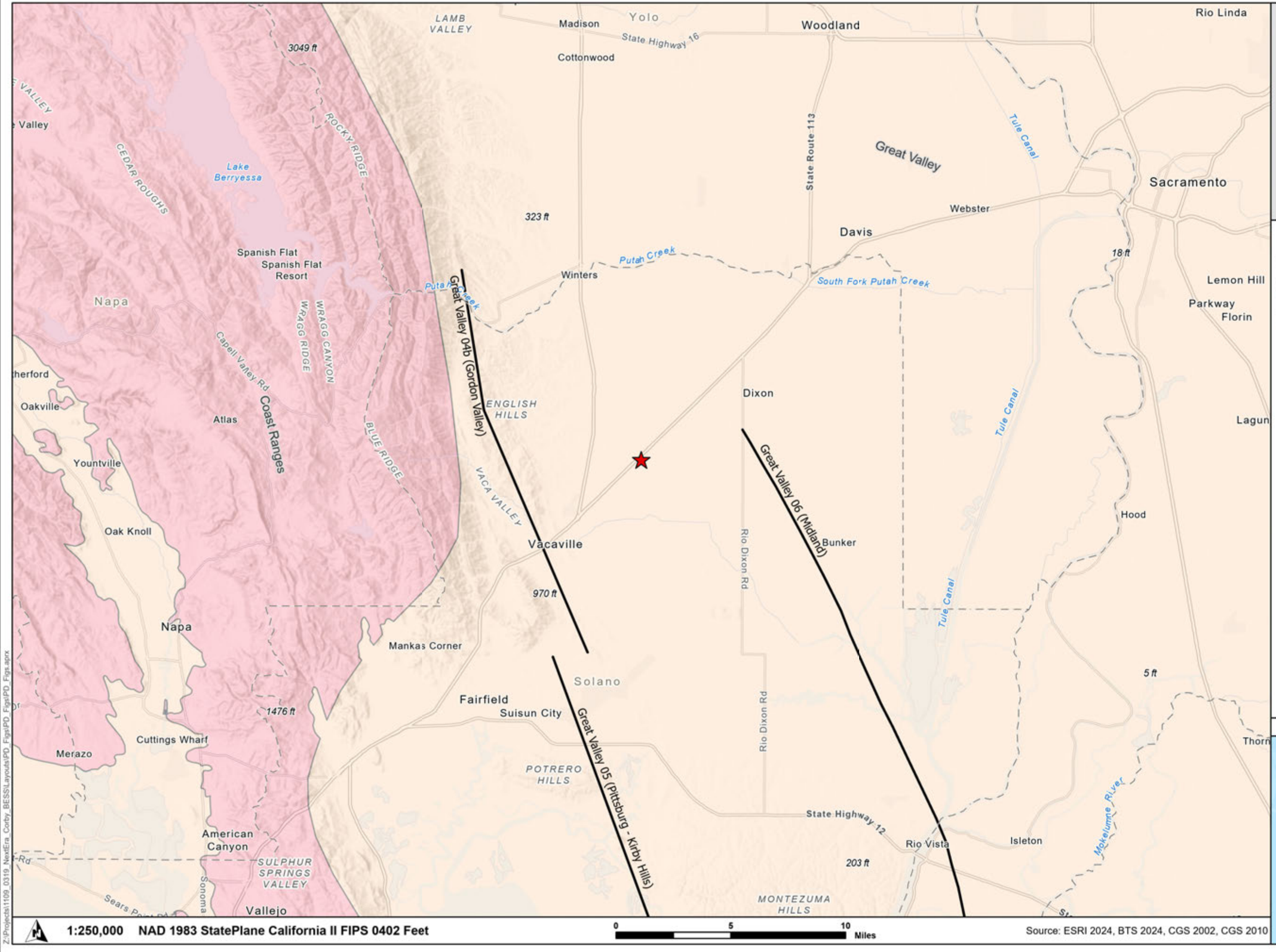
Source: Dawson 2009

[2] Appendix B (g) (16) (A) and Appendix B (g) (17) (A)

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.7-1 Geomorphic Provinces

Solano County, CA



Project Site

USGS Fault Lines

Geomorphic Provinces

Coast Ranges

Great Valley

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Reference Map

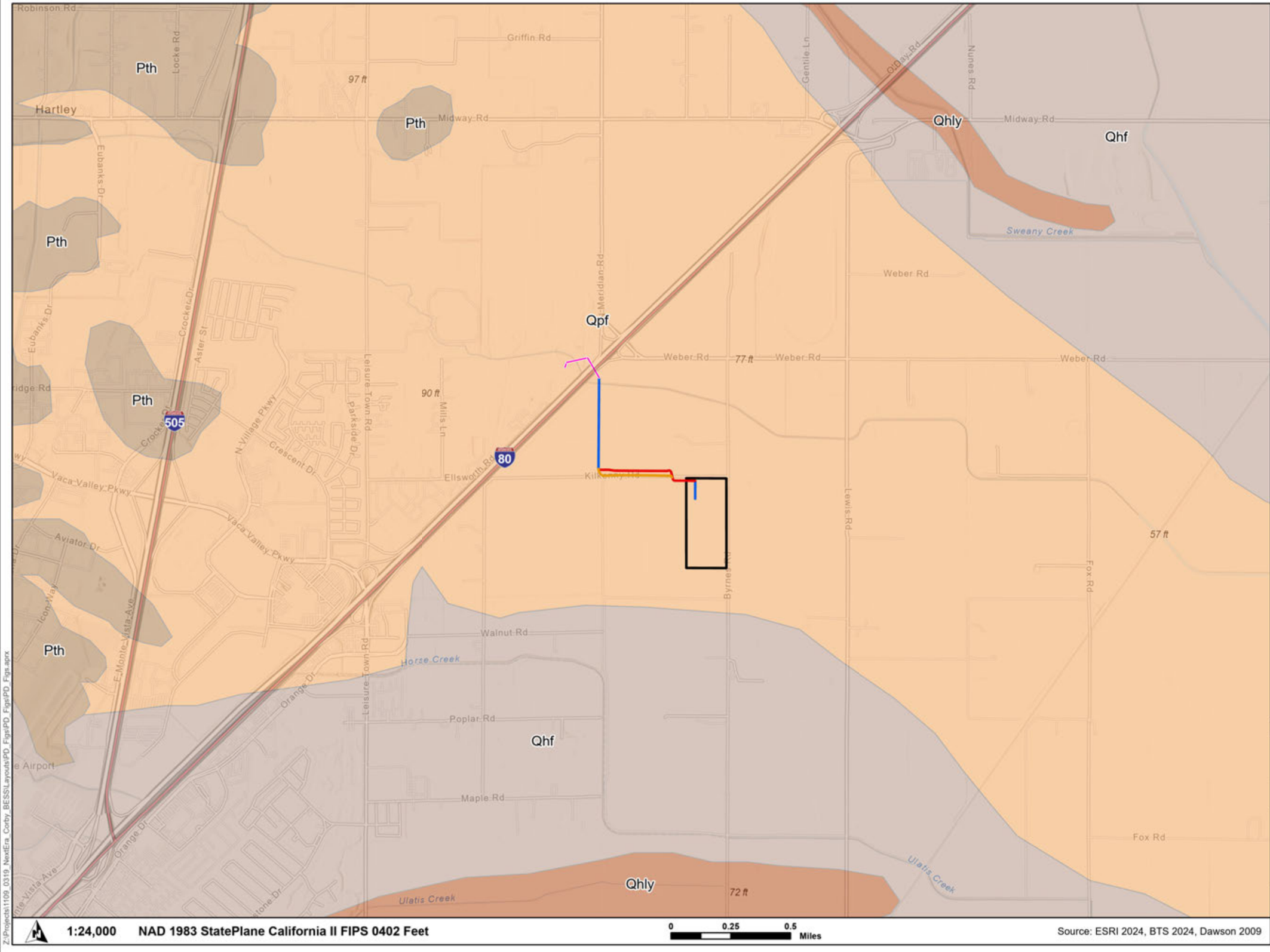


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NextEra Energy Corby Battery Energy Storage System Project

Figure 4.7-2 Geology

Solano County, CA



Proposed Features
- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

PG&E Features
- Gen-tie (Overhead; PG&E)

Quaternary
- Alluvial fan deposits (Opf)
- Holocene alluvial fan deposits (Qhf)
- Latest Holocene fan levee deposits (Qhly)
- Pleistocene terrace deposits (Pth)

Transportation
- Interstate Highway
- U.S. Highway
- State Highway

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Reference Map



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The site-specific geotechnical investigation performed for the Project identified the onsite surficial sediments to be alluvial fan deposits from the late Pleistocene (Qpf). The subsurface investigation determined that different thicknesses of sediment layers containing varying amounts of clay with some sand extend down to a depth of 13 feet below the ground surface (Appendix 2-E).

Surface Fault Rupture

The Project site does not intersect an established Alquist-Priolo Earthquake Zone of Required Investigation (CGA 2024). The nearest faults that have been so designated are the Green Valley fault zone and the Cordelia fault zone, both of which are over 10 miles southwest of the Project site. Fault zones have been identified closer to the Project site, but these are not considered active or important enough to be designated an Alquist-Priolo zone. These faults include the Gordon Valley and Pittsburgh-Kirby Hills fault zones to the west and the Midland fault zone to the east (see Figure 4.7-1).

The U.S. Geological Survey (USGS) and California Geological Survey (CGS) developed a version of the Uniform California Earthquake Rupture Forecast (UCERF3) model to evaluate the likelihood of surface rupture caused by an earthquake (Field and 2014 Working Group 2015). The UCERF3 results for earthquakes with magnitude of 6.7, 7.0, and 7.5 or greater on the Richter scale for the nearest fault subsections to the Project site are provided in Table 4.7-2.

Table 4.7-2. Earthquake Probabilities

Fault/Zone	Distance (miles)	Probability of an Earthquake in the next 30 years		
	Richter-Scale Magnitude:	≥ 6.7	≥ 7.0	≥ 7.5
Great Valley 04b (Gordon Valley) Subsection 0	8.4	1.47%	0.85%	<0.01%
Great Valley 04b (Gordon Valley) Subsection 1	5.5	1.47%	0.85%	<0.01%
Great Valley 04b (Gordon Valley) Subsection 2	4.9	1.15%	0.62%	<0.01%
Great Valley 04b (Gordon Valley) Subsection 3	5.1	0.93%	0.45%	<0.01%
Great Valley 05 (Pittsburg - Kirby Hills) Subsection 0	8.5	1.17%	0.76%	0.11%
Great Valley 05 (Pittsburg - Kirby Hills) Subsection 1	10.7	1.18%	0.77%	0.11%
Great Valley 06 (Midland) Subsection 0	5.4	0.30%	0.14%	--
Great Valley 06 (Midland) Subsection 1	7.9	0.35%	0.18%	--
Great Valley 06 (Midland) Subsection 2	12.1	0.45%	0.23%	--

Source: (Field and 2014 Working Group 2015)

The distance from the Project site to the closest point in each subsection is between 4.9 miles and 12.1 miles. Across all of these faults, the likelihood of an earthquake in the next 30 years is less than 2 percent, and decreases substantially as larger magnitude earthquakes are considered. Therefore, the probability of surface rupture caused by an earthquake near the Project is low.

Seismic Ground Shaking

Ground shaking occurs due to a seismic event and can cause damage to life and property and may affect areas hundreds of miles away from the earthquake's epicenter. The extent of the damage varies by event and is determined by several factors, including, but not limited to, magnitude and depth of the earthquake, distance from epicenter, duration and intensity of the shaking, underlying soil and rock types, and integrity of structures. The San Francisco Bay region, including Solano County, is seismically active, and moderate to severe ground shaking in the vicinity of the Project site is possible. However, the UCSRF3 model results, discussed above, suggest that the probability of a significant ground shaking caused by an earthquake near the Project site is relatively low.

Liquefaction

Liquefaction is a phenomenon where unconsolidated, water-saturated sediments become unstable due to the effects of strong seismic shaking. During an earthquake, these sediments can behave like a liquid, potentially causing severe damage to overlying structures. Lateral spreading is a type of landslide that can occur when unconsolidated liquefiable materials break and spread due to the effects of gravity, usually down gentle slopes. Liquefaction-induced lateral spreading is defined as the finite, lateral displacement of gently sloping ground as a result of pore-pressure buildup or liquefaction in a shallow underlying deposit during an earthquake. The occurrence of liquefaction is dependent on many complex factors, including the intensity and duration of ground shaking, the particle-size distribution of the soil/sediments, the density of the soil, and shallow groundwater.

The soil parent material at the Project site is unconsolidated Alluvial Fan Deposits (Qpf), and the soils there have a high content of clays, making them cohesive. Preliminary assessment of the potential for liquefaction at the site has rated Qpf sediments as having a low susceptibility to liquefaction (Knudsen et al. 2000). Although shallow groundwater was noted in the site-specific geotechnical report (at depths from 7.5 feet to 15 feet below ground surface), the geohazard assessment provided in the geotechnical report also indicated there was a low risk of liquefaction at the site due to other site conditions (Appendix 2-E). Therefore, the potential for liquefaction or lateral spreading is expected to be low.

Landslides

Landslides occur when rock, soil, and other debris are displaced due to the effects of gravity and an initiating circumstance (e.g. an earthquake or excessive rainfall). The potential for material to detach and move down slope depends on multiple factors, including the type of soils present, the moisture content of the soils, and the steepness of the terrain. The Project area is very flat with a gentle slope to the east of less than 0.2 percent. In addition, there are no previous landslides or landslide susceptible areas mapped on or around the site (Majmundar 1989). For these reasons, the potential for landslide hazards at the site is considered to be very low.

Subsidence

Land subsidence is the gradual settling or sudden sinking of the earth's surface due to subsurface movement of earth materials. Compaction of subsurface water-containing geologic layers is the primary cause of land subsidence. Regional ground subsidence typically is caused by compaction of sub-surface geology as a result of petroleum or groundwater withdrawal. Subsidence due to groundwater pumping has been documented the Sacramento Valley to the north and in the Sacramento/San Joaquin Delta due to peat loss to the southeast. However, there are no areas of subsidence identified in near the Project site (USGS 2024).

The geotechnical investigation (Appendix 2-E) assessed the risk for subsidence (as related to karst geology) as low. There is no limestone or karst geology reported for the area, and no voids were encountered during any of the borehole drilling activities.

4.7.2.3 Soils

The Natural Resources Conservation Service (NRCS, previously known as the Soil Conservation Service or SCS) provides soil classification information for the United States, originally through county soil surveys and subsequently through an online web service. The soil survey for Solano County (SCS 1977) identifies the soil series and associations found within the County, including those located in and around the project area, describing properties and characteristics. The parent material for all of these soils is alluvium generally derived from sedimentary rock (NRCS 2024), and presumably developed on unconsolidated Quaternary sediment. Figure 4.7-3[3] shows the mapped soil units in and around the Project footprint (Project site and gen-tie corridor). Five of these soils are found within the Project footprint boundaries; their descriptions and approximate aerial extents are provided in Table 4.7-3.[4]

The site-specific geotechnical report (Appendix 2-E) evaluated the surface materials by drilling 10 boreholes to maximum depths from 20.5 feet to 40.5 feet and digging two test pits to 10 feet. On-site testing was performed and soil samples were collected from the boreholes and test pits that were used in various laboratory tests of soil properties. A general summary of the results of the geotechnical evaluations include the following:

- Moderate to high risks were found from shrink/swell, shallow groundwater; and corrosivity (to steel) in the soils.
- Low to moderate risk was found from settlement.
- Low risks were found from collapsible soils, shallow bedrock, frost penetration depth, corrosivity (to concrete), ground rupture, seismicity, liquefaction, flooding, slope stability, subsidence (caves/karst).

[3] Appendix B (g) (15) (A)
[4] Appendix B (g) (15) (A) (i) and (g) (15) (A) (ii)

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Corby Battery Energy Storage System Project

Figure 4.7-3
NRCS Soils

Solano County, CA

Buffer (0.5-mile)

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

PG&E Features

- Gen-tie (Overhead; PG&E)

NRCS Soils

- Capay clay, 0 percent slopes (Cc)
- Capay silty clay loam, 0 percent slopes (Ca)
- Clear Lake clay, 0 to 2 percent slopes (CeA)
- San Ysidro sandy loam, 0 to 2 percent slopes (SeA)
- San Ysidro sandy loam, thick surface , 0 to 2 percent slopes (SfA)
- Water (W)
- Yolo loam, clay substratum (Yr)

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Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI 2024, NRCS 2024, BTS 2024

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Table 4.7-3. Project Footprint Soil Types

Soil Series	Slopes (%)	Extent (% of Site)	Description	Shrink-Swell Potential
Capay clay (Cc)	--	6.5	Nearly level, moderately well-drained soils formed in alluvium derived from sedimentary rocks. Soil profile can extend to a depth of 80 inches. Permeability: slow Erosion Hazard: slight hazard Land Capability Class: 2s / 4s	high
Clear Lake clay (CeA)	0 to 2	12.1	Poorly drained soils in basins formed in mixed alluvium. Typical profiles can extend to a depth of 60 inches. Permeability: slow Erosion Hazard: no hazard Land Capability Class: 2s / 4s	high
San Ysidro sandy loam (SeA)	0 to 2	46.0	Moderately well-drained soils formed in alluvium derived from sedimentary rocks. Average soil profile can extend to a depth of 68 inches. Permeability: very slow Erosion Hazard: slight hazard Land Capability Class: 4s / 4e	low
San Ysidro sandy loam, thick surface (SfA)	0 to 2	20.2	Moderately well-drained soils formed in alluvium derived from sedimentary rocks. Average soil profile can extend to a depth of 68 inches. Permeability: very slow Erosion Hazard: slight hazard Land Capability Class: 3s / 4e	low
Yolo loam, clay sub-stratum (Yr)	--	15.2	Nearly level, well-drained soils with a soil profile that typically has A and C horizons that can extend to a depth of 61 inches. Permeability: slow Erosion Hazard: slight hazard Land Capability Class: 2s / 4e	low

1/ Land capability classes for irrigated / non-irrigated soils are as follows

- 2s moderate limitations that restrict the choice of plants or that require moderate conservation practices; "s" shows that the soil is limited mainly because it is shallow, droughty, or stony.
- 3s severe limitations that restrict the choice of plants or that require special conservation practices, or both; "s" shows that the soil is limited mainly because it is shallow, droughty, or stony.
- 4e very severe limitations that restrict the choice of plants or that require very careful management, or both; "e" shows that the main hazard is the risk of erosion unless close-growing plant cover is maintained.
- 4s very severe limitations that restrict the choice of plants or that require very careful management, or both; "s" shows that the soil is limited mainly because it is shallow, droughty, or stony.

Sources: SCS 1977; NRCS 2024

Shrink Swell

Expansive soils are clay rich soils that swell and shrink with wetting and drying. The shrink-swell capacity of expansive soils can result in differential movement below or adjacent to a structure, causing distress to the structure. Clay rich soils are present in the Project site, including the Capay clay (Cc) and the Clear Lake clay (CeA), which cover less than 20 percent of the Project site, have both been characterized with high shrink-swell potential. The San Ysidro sandy loam (SeA), San Ysidro sandy loam, thick surface (SfA), and Yolo loam, clay sub-stratum (Yr) are considered to have low shrink-swell

potential. Therefore, the Project site location will potentially subject people and structures to the effects of expansive soils, which could result in damage to structures.

The geotechnical report (Appendix 2-E) evaluated the soils with regard to expansive (shrink/swell) soils by providing an estimate of "potential vertical rise" (PVR) from the soil samples collected. PVR is an estimate of the potential of an expansive soil to swell from its current state if the clay is allowed to absorb additional moisture. The value of PVR estimated for the site is 1.5 inches, which is above the acceptable value of 1.0 inch. Corrective actions would be necessary during site preparation to remove the uppermost layer pf clay-rich soils and replace it with engineered fill that would lower the PVR.

Shallow Groundwater

Based on observations from borehole drilling, test pits, and data obtained from the California Department of Water Resources (DWR), the geotechnical investigation (Appendix 2-E) concluded that shallow groundwater will be a moderate to high risk at the Project site. Each of the boreholes drilled for the investigation encountered groundwater, and at depths ranging from 7.5 feet to 15 feet below the ground surface. The DWR data obtained were for 24 wells in Solano County, many within 2 miles of the Project site. The depth to groundwater in 20 of these wells ranged between 13 feet and 17 feet below the ground surface. Foundation design considerations were recommended and dewatering systems may be needed.

Corrosivity

Using both published data and laboratory test results from samples collected at the site, the geotechnical investigation (Appendix 2-E) assessed the corrosivity potential of these soils both for concrete and for steel. Laboratory test results showed a low potential for corrosion of concrete, while soils are considered to have a moderate to high potential for corrosion of unprotected steel. Cathodic protection was a recommended protective measure for buried metal, with specific design by a qualified corrosion engineer.

4.7.2.4 Paleontological Resources

Paleontological resources are the fossilized remains of plants and animals, including vertebrates (animals with backbones), invertebrates (animals without backbones), and microscopic plants and animals (microfossils), Fossils also include mineralized body parts, body impressions, or footprints and burrows. They are valuable, non-renewable, scientific resources used to document the existence of extinct life forms and to reconstruct the environments in which they lived. Fossils can aid in dating the relative ages of depositional layers in which they occur and of the geologic events that created those deposits.

The age, abundance, and distribution of fossils depend on the geologic formation in which they occur and the topography of the area in which they are exposed. The geologic environments within which plants or animals became fossilized often were quite different from the environments in which the geologic formations are currently found.

ECORP Consulting, Inc. performed a background data search, a literature search, and a field survey to help evaluate the potential for finding paleontological resources at the Project site and along the

generation tie (gen-tie) corridor. The background data search covered holdings of the University of California Museum of Paleontology (UCMP), published and unpublished geological and paleontological literature, and previous similar work for Solano County and the City of Vacaville. The results of its assessment are summarized in this section and the full report is provided in Appendix 4.7-A.

UCMP data identified only one location with a known paleontological resource in the area, approximately 5 miles southwest of the Project site (described in Appendix 4.7-A).[5] The assessment of paleontological sensitivity focused on two primary rock units: Holocene (recent) alluvial deposits and Pleistocene (older) alluvium. In much of Solano County Holocene deposits overlie Pleistocene alluvium. At the Project site, most of the surface materials have been disturbed by agricultural activity over many years, but at depth there is a potential to encounter Pleistocene alluvium. ECORP's assessment was that Holocene deposits are found at the surface of the Project site and are underlain by the older Pleistocene alluvium. With available information for the Project site and other county locations, they estimated the likely depth at which the older Pleistocene deposits would be found could range from 10 feet to 200 feet below the ground surface (Appendix 4.7-A).

ECORP used the U.S. Bureau of Land Management's Potential Fossil Yield Classification (PFYC) System for the geologic units at the Project site to provide a rating. Based on the relative abundance of significant paleontological resources and their sensitivity to adverse impacts, the Project site was evaluated as a PFYC Class 3 (moderate potential) to Class 4 (high potential) for the older Pleistocene alluvium. The ECORP report also provides recommended management actions based on the assessed sensitivity of paleontological resources likely in the general area and on the Project site[6].

4.7.3 Environmental Analysis

4.7.3.1 Geologic Hazards

This section includes a brief discussion of relevant geologic considerations for the Solano County area.

Faults and Seismic Ground Shaking

The Project site does not lie within any mapped earthquake fault zones according to the available data. It is possible the area could be affected by earthquakes or seismic ground shaking since there are faults in the Great Valley Fault Zone to the east (Midland) and to the west (Gordon Valley and Pittsburg-Kirby Hills). However, these faults at their closest points are 5 miles to 6 miles away from the Project site (see Table 4.7-2 and Figure 4.7-1). The State of California classifies the Kirby Hills and Midland faults as Quaternary (displacement age undifferentiated) and the Vaca fault (similar in location to the Fault labeled as the Gordon Valley fault by the USGS) as late Quaternary (fault displacement within the last 700,000 years). Both suggest much older displacement than that experienced on Holocene faults (sometime within the last 11,700 years). Current data from the USGS suggest the risk of an earthquake occurring on one of these closest faults is less than 2 percent, and on some segments, it is much less than 1 percent (CGS 2024; Field and 2014 Working Group 2014).

[5] Appendix B (g) (16) (D)
[6] Appendix B (g) (16) (C)

The Project will not provide habitable structures and only will have personnel onsite for periodic maintenance. As a result, the facility will not potentially expose people or structures to substantial adverse effects from fault rupture due to an earthquake. There will be no impact related to surface fault rupture during Project construction or operations and maintenance (O&M).

The Project site potentially is subject to moderate to severe seismic ground shaking due to the proximity to the Great Valley fault zone. Should strong seismic ground shaking occur at the Project site, damage to the battery energy storage system (BESS) units and other ancillary facilities could result in potential damage and/or injury to staff if onsite at the time of a significant earthquake. However, the Project will be subject to the seismic design criteria of the California Building Code (CBC), which requires that all improvements be constructed to withstand any anticipated ground shaking from regional fault sources and require that the Project owner retain a licensed geotechnical engineer to design the Project components to withstand probable, seismically induced ground shaking.

Seismic-Related Ground Failure and Liquefaction

The Project site may be subject to moderate to strong seismic ground shaking in the event of an earthquake in the area; however, the risk of liquefaction is low to moderate because the onsite soils and conditions are not susceptible to liquefaction.

The Applicant is required to design proposed improvements in accordance with applicable CBC seismic design standards and as recommended by a California-registered professional geotechnical engineer in the site-specific geotechnical review. As part of the geotechnical report, consistent with building code seismic design standards, the licensed geotechnical engineer will be required to consider potential liquefaction in the design plans.

Compliance with CBC requirements, including implementation of recommendations provided in the geotechnical report, and Chief Building Official (CBO) enforcement will reduce or avoid impacts related to ground failure, including liquefaction. Neither Project construction nor O&M activities will directly or indirectly cause adverse effects related to ground failure, including liquefaction.

Landslides

The Project site has limited topographic relief with an essentially flat location on the floor of the Great Valley geomorphic province. Also, there are no mapped landslide locations on or around the site (Majmundar 1989). Therefore, the possibility of a landslide occurring on the Project, or nearby, because the Project is built, is very low.

IMPACT 4.7-1: Would the project directly or indirectly cause potential substantial adverse effects, including the risk of loss, injury, or death involving 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 or strong seismic ground shaking? Seismic-related ground failure, including liquefaction? Landslides? (Less than Significant Impact)

The Project site is not located within an earthquake fault zone established by the State of California under Alquist-Priolo Earthquake Fault Zoning Act. In addition, no identified faults mapped by the CGS

or USGS are anywhere near crossing the site. The closest faults (the Gordon Valley and Midland faults) are about five miles from the Project site (see Figure 4.7-1). These are late Quaternary-aged faults (i.e., movement sometime in the last 130,000 years).

All construction onsite will adhere to the specifications, procedures, and site conditions contained in the final design plans. Also, in accordance with the CBC, Project designs will comply with the seismic recommendations of a California-registered, professional geotechnical engineer. The final structural design will be subject to approval and follow-up inspection by the CBO. Final design requirements will be provided to the onsite construction supervisor and the County to ensure compliance. Adherence to the applicable CBC requirements and local agency enforcement will ensure that the Project will not directly or indirectly cause substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Therefore, impacts related to ground shaking during Project construction, O&M, or decommissioning will be less than significant.

Considering the distance to the closest faults and the low probability of movement, ground rupture will not be anticipated at the Project site should the any local fault experience an earthquake. Therefore, impacts related to rupture along a known earthquake fault will be less than significant and no mitigation measures will be required.

IMPACT 4.7-2: Would the project result in substantial soil erosion or loss of topsoil? (Less than Significant Impact)

In order to assess the potential for soil erosion under the different phases of the Project, separate analyses were employed for water erosion and for wind erosion. These analyses provide quantitative estimates for total erosion that can be compared with existing (i.e., baseline) conditions.

Potential soil loss due to erosion from overland flow of water was estimated using a California Department of Transportation application of the RUSLE2 computer model (Caltrans 2011).[7] The RUSLE2 computer model was initially developed by the U.S. Department of Agriculture as a hand calculation tool (the Universal Soil Loss Equation). Its use has since been expanded for more robust applications as a computer model (the most current version of which is the RUSLE2). It has been applied to the Project in distinct areas of disturbance with common parameters and the results are summarized in Table 4.7-4. Calculation results for the RUSLE2 modeling are provided in Appendix 4.7-B.

Estimates of soil loss by wind erosion were made using procedures and values provided in the Fugitive Dust Manual (CE 2006) and employing air pollutant emissions factors from the USEPA (1995). Results of the estimating process are given in Table 4.7-5 and details of the estimating process are provided in Appendix 4.7-C. Wind erosion was estimated for three different activities considered over the expected construction schedule: (1) general construction activities (such as cut, fill, grading, and other infrastructure installation), (2) vehicle traffic over unpaved roadways, and (3) general wind mobilization of fine-grained particles.

[7] Appendix B (g) (15) (B) (i)

Table 4.7-4. Estimated Water Erosion of Soils

Project Segment[1/]	Disturbance Type and Duration[2/]	Construction Period Estimated Soil Loss[3/]			
		Background (tons/year)	Unmitigated (tons)	Mitigated (tons)	Post-Construction (tons/year)
Separate Areas					
Project Area	None	8.85			
Battery Energy Storage System (BESS)	Grading (3 months) Other (11 months)		16.05	13.41	2.07
Project Substation	Grading (3 months) Other (11 months)		8.58	7.17	1.14
Laydown Areas	Grading (3 months) Other (11 months)		8.02	6.71	1.07
BESS Access Road	Grading (3 months) Other (11 months)		0.03	0.03	0.01
Substation Access Road	Grading (3 months) Other (11 months)		0.12	0.12	0.03
Linear Features					
Project Gen-Tie Area	None	7.01			
Gen-Tie (above ground)	Grading (0 months) Other (8 months)		4.34	3.58	1.49
Gen-tie (below ground)	Grading (0 months) Other (8 months)		2.60	2.53	0.27
TOTALS	**(tons)**		**35.24**	**29.74**	
ANNUAL RATE	**(tons/year)**	**15.86**			**5.51**

Notes:
1/ Erosion estimates have been aggregated for these general segments of the Project. RUSLE2 model was applied to areas within segments based on topography, soil type, and other parameters.
2/ "None" includes existing conditions and assumes existing land use which is agriculture - Winter Wheat and Orchards; "Grading" includes cut and fill activities; "Other" includes all other construction-type activities.
3/ Estimates were made using the RUSLE2 model (Caltrans 2011). Background provides estimated soil loss under existing conditions and does not have a specific duration, so loss is given as tons/year; Unmitigated soil loss estimates assume regular construction activities without applying BMPs; Mitigated soil loss estimates assume regular construction activities with application of BMPs; Post-Construction soil loss estimates assume application of BMPs (i.e., gravel on sites and impoundment at end of drainage in stormwater detention pond) and does not have a specific duration, so loss is given as tons/year.

Table 4.7-5. Estimated Wind Erosion of Soils During Construction

Disturbance Type[1/]	Estimated Soil Loss[2/]		
	Construction Period		Operations Period
	Unmitigated (tons/yr)	Mitigated (tons/yr)	(tons/yr)
Construction Activity	2.330	1.274	--
Unpaved Road Traffic	0.012	0.004	0.0001
General Wind Mobilization	6.386	0.958	0.192
TOTALS	**8.728**	**2.236**	**0.192**

Notes:
1/ Separate estimation procedures were used for each type of disturbance that considered area and duration of disturbance; see Appendix 4.7-C for details.
2/ Calculations were used to estimate fine particle loss without BMPs, and then adjusted with a mitigation factor to estimate comparable losses with BMPs applied. Details provided in Appendix 4.7-C.

Construction

The proposed Project location is in a very flat area with a topsoil layer that has been previously disturbed for agriculture. The Project's construction will result in new ground surface disturbance during site clearance, cut and fill as needed (predominantly fill), and grading that could create the

potential for soil erosion and loss of topsoil. The Project will be designed and constructed in accordance with state and local guidelines intended to limit erosion. A stormwater pollution prevention plan (SWPPP), including erosion and sediment control best management practices (BMPs), will be required as one of the Project's implementation elements (see PD HYD-02 in Section 4.10, *Hydrology and Water Quality*).

Soil erosion during construction would be higher than it is under existing conditions (baseline), without erosion and sediment control BMPs in place. However, with these BMPs applied, the construction period erosion values are comparable to existing conditions.

Estimates of soil loss during the construction period (Table 4.7-4) show that background levels of soil erosion from water at the Project site (existing conditions) are relatively low. These rates will increase substantially using normal construction procedures without BMPs. However, the Project will have an approved SWPPP developed and applied during the construction period. These applicable and specified BMPs will limit onsite erosion of soils and offsite transport of sediment by about 15 percent. This will reduce the anticipated soil loss due to water erosion during construction.

Background values for wind erosion at the project site could not be easily estimated, but they are expected to be low. Estimated wind erosion values for the construction period and the subsequent operations period are substantially less than expected for water erosion. Control of wind erosion during construction using standard BMPs (wetting soils, applying soil cover material like gravel, and others) will reduce fine material movement and loss from the Project site. Such measures applied during construction are expected to reduce wind-eroded materials by as much as 75 percent over general construction procedures.

The National Pollutant Discharge Elimination System (NPDES) Construction General Permit (Construction General Permit) was developed to ensure that stormwater is managed to protect water quality and includes erosion control measures for construction sites as well as post-construction requirements. The Construction General Permit requires preparation and implementation of a SWPPP that identifies BMPs to control stormwater from construction work sites and to prevent offsite transport of disturbed soils. The BMPs may include, but are not limited to, physical barriers to prevent erosion and sedimentation; limitations on work periods during storm events; protection of stockpiled materials; and other measures identified by a qualified SWPPP preparer that would substantially reduce or prevent erosion from occurring during construction. Given the flat topography of the Project site, and presuming compliance with these independently enforceable existing requirements, potential impacts from the Project due to soil erosion and loss of topsoil will be less than significant during construction.

Operations

After construction, during the operations period, the Project site will be stabilized with a combination of equipment enclosures (on foundations) and gravel surfacing within the BESS and Project substation areas and entrance roads. Landscaping and revegetation will stabilize the remainder of the site. No large-scale ground-disturbing activities will occur during operations. Based on this, expected water erosion values are significantly below existing conditions.

Wind erosion during the operations period will be much lower than it will be during the construction period. As stated above, much of the site will be covered with energy storage units, which will provide soil cover and prevent wind detachment of soil particles. The Project site ground surface that is not covered with equipment foundations will be stabilized with a combination of gravel surfacing or vegetation. The space in between the units will also be protected to a degree because the units will act as wind barriers.

IMPACT 4.7-3: Would the project be located on a geologic unit 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? (Less than Significant Impact)

Construction

The Project site is located on flat terrain with stable sediments that contain a percentage of clay to help bind together the larger size fractions. Based on the geotechnical investigation, there is no indication that the ground in the Project vicinity is inherently unstable (Appendix 2-E). The Project components to be installed are relatively common and, from a geology and soils perspective, are minimally invasive. Accordingly, the Project's construction will not generate new natural geologic hazards (such as landslides, lateral spreading, subsidence, liquefaction, or collapse), or result in significant impacts on the geology and soils of the Project site.

Temporary excavations may be needed during construction that could potentially cave, resulting in limited, and very localized, ground failure. Foundation excavations for the BESS array and other equipment foundations are anticipated to be approximately 4 feet deep below existing grades. In addition, utility trenching on the Project site is expected to be approximately 6 feet deep. Offsite underground gen-tie trenching will be approximately 6 feet below ground surface.

Although soil conditions may be encountered during drilling or excavation that could result in caving, the use of common construction techniques can prevent caving and protect construction and adjacent areas. During drilling, such techniques can include the installation of manufactured casing to support borehole walls, or using viscous, nonhazardous, and biodegradable fluids during drilling to support the borehole walls. Shoring can be used to stabilize trench excavations. The soils present may mandate various types/styles of bracing or excavation support. However, the excavation depth and configuration generally drive any requirements for temporary support of open excavations. All prudent and required excavation precautions, consistent with the Solano County Building Code, will be developed with the Project design plans.

Use of normal and common construction techniques will minimize impacts on adjacent improvements. As such, impacts associated with onsite or offsite ground failure during construction will be less than significant, and mitigation will not be required.

Operations

The soils in the Project site are not prone to collapse or settlement, two causes of differential movement beneath foundations. While such movement can cause distress to above-grade and at-grade structures, it is not likely in this situation. Therefore, the operation of the above- and at-grade

structures associated with the Project will not subject people and structures to the effects of ground settlement, resulting in damage to structures and/or injuries.

IMPACT 4.7-4: Would the project be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial direct or indirect risks to life or property? (Less than Significant Impact)

The risk from expansive soils at this site has been evaluated as moderate to high based on laboratory analyses of soil samples taken for the site-specific geotechnical investigation (Appendix 2-E). The PVR value estimated for site soils was 1.5 inches, which is greater than an acceptable value of 1.0 inch.

Construction

Expansive soils can be a concern during construction, but there will be opportunities to address such soils then. Effective Project design and site preparation can reduce or eliminate the potential for impacting the completed facility. Corrective actions can be taken to lower the PVR of the construction surface through removal of clay-rich soils and replacement with engineered fill. Because of the temporary nature of the construction phase, expansive soils are not likely to result in a significant impact on construction activities.

Operations

While shrink-swell potential is a moderate to high risk to the proposed facilities at this site, proper Project design and site preparation can effectively reduce it to a less than significant impact. The Applicant had a licensed geotechnical engineer prepare a site-specific investigation that employed field and laboratory testing techniques that provided design recommendations for the Project. In addition, all structures installed as part of the Project must be designed and constructed in accordance with the Solano County Building code, which includes requirements specific to expansive soils. The required design standards will produce structures that can tolerate the effects of expansive soil or require that expansive soil remediation is implemented. Such remediation can include soil removal and replacement, chemical treatment, or structural enhancements. Therefore, operational impacts related to expansive soils will be less than significant, and mitigation measures will not be required.

IMPACT 4.7-5: 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? (Less than Significant Impact)

The Project will use portable toilets onsite during construction and when necessary for infrequent major maintenance events during operations. Waste disposal will occur at a permitted offsite facility equipped to handle sanitary waste. Therefore, a septic tank system will not be required on the Project site.

Construction

Sanitary waste is expected to average up to 30 gallons per day during construction. All waste disposal will occur offsite at a permitted facility equipped to handle sanitary waste. Thus, a septic tank system will not be required on the Project site during construction.

Operations

While the facility is in use during the operations phase, there will be no regular onsite crew operating the facility and no permanent domestic sanitation facilities will be in place. Portable toilets will be available onsite for O&M staff and contractor use during infrequent major maintenance activities. Therefore, the use of septic tanks or alternative wastewater systems is not expected for the Project. As a result, there will be no operational impacts involving the adequacy of soils to support septic tanks or alternative waste disposal systems.

The Project will not introduce an environmental or public health hazard by building septic tanks or other wastewater disposal systems in soils that are incapable of adequately supporting such systems. There will be a less than significant impact related to inadequate soils supporting an onsite septic system.

IMPACT 4.7-6: Would the project directly or indirectly destroy a unique paleontological resource or site or unique geologic feature? (Less than Significant Impact)

Construction

Based on the paleontological resource assessment provided by ECORP (Appendix 4.7-A), some of the rock units in the Project site and vicinity have been judged to have moderate (Class 3) to high (Class 4) potential for containing fossils. As a result, there is potential to impact paleontological resources during excavations to certain depths during Project construction. However, any potential impacts will be limited through paleontological Project Design Measures incorporated to protect and recover any resources that are discovered. **PD GEO-1** requires development of a paleontological mitigation and monitoring plan. **PD GEO-2** requires a worker's education program be developed and implemented to increase worker vigilance for fossils. **PD GEO-3** requires that a qualified paleontologist is onsite during excavation activities to monitor excavated materials and formations for signs of fossils.

Operations

No ground disturbance is planned or expected during the operations phase of the Project. As a result, there is no potential for encountering or destroying paleontological resources.

4.7.3.2 PG&E Facilities

To accommodate the Project, Pacific Gas and Electric (PG&E) will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the point of change in ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The PG&E facilities are described in further detail in Section 3.0, *Electrical Transmission*.

The construction activities associated with the PG&E infrastructure also will be required to comply with, and adhere to, the same design criteria as the rest of the Project components. Construction will

be required to comply with requirements of the Construction General Permit, similar to the Project components evaluated above, including implementation of BMPs during construction activities. Subsurface excavation required for the PG&E infrastructure is not anticipated to occur at depths below approximately 6 feet below ground surface but may include deeper drilled shaft foundations pending final design. Nonetheless, because fossils could be encountered, the implementation of Project Design Measures for unanticipated fossil discovery will reduce the potential significance of any unanticipated fossil discoveries to a less than significant level. Thus, implementation of **PD GEO-1, PD GEO-2,** and **PD GEO-3** will ensure these improvements do not have a substantial adverse effect on any paleontological resources, and no additional mitigation measures will be required.

4.7.4 Cumulative Effects

Impacts related to geology, soils, and seismicity tend to be site-specific and depend on the local geology and soil conditions. For these reasons, the geographic scope for potential cumulative impacts consists of the Project site and adjacent areas. The Project will be designed and constructed in accordance with the most current building code requirements, and the potential for the Project to exacerbate seismic hazards will be less than significant. State and local building regulations and standards have been established to address and reduce the potential for projects to cause or exacerbate seismic hazard impacts. All projects will be required to comply with applicable provisions of these laws and regulations. Compliance with such requirements will limit the potential for impacts to a less than significant level. The purpose of the CBC (and related local ordinances) is to regulate and control the design, construction, quality of materials, use or occupancy, location, and maintenance of all buildings and structures within its jurisdiction. Based on compliance with these requirements, the incremental impacts of the Project combined with impacts of other projects in the area will not combine to cause a significant cumulative impact related to seismic hazards.

This Project, as well as other individual projects are required to comply with existing codes, standards, and permitting requirements (e.g., preparation of a SWPPP under the state Construction General Permit) to reduce erosion impacts. Potential Project-related impacts to soil erosion and loss of topsoil will be reduced through the implementation of the BMPs identified in the SWPPP. Requirements in the state Construction General Permit are designed to reduce adverse cumulative effects of construction-phase erosion. Individual projects' compliance with stormwater control requirements will reduce the overall cumulative impact to a less than significant level.

The geographic scope of cumulative impacts to paleontological resources includes the Project site and adjacent areas where Pleistocene-age deposits could be disturbed. If there were paleontological resources that extended across areas of ground disturbance of the proposed Project and cumulative projects, the projects could result in the loss of paleontological resources, a potentially significant impact. However, with implementation of **PD GEO-1, PD GEO-2** and **PD GEO-3**, the proposed Project will have a less than significant impact with regard to loss of paleontological resources should an inadvertent discovery be made during construction. This less than significant impact will not be cumulatively considerable because work will be halted immediately in the event of a find, thereby minimizing the potential impact.

4.7.5 Mitigation Measures

No mitigation measures related to geology, soils, or paleontological resource impacts are proposed because the following Project Design Measures are incorporated into the design of the Project:[8]

PD GEO-1: Paleontological Resources Mitigation and Monitoring Plan: The Project's Paleontological Resource Specialist (PRS) will develop a Paleontological Resources Mitigation and Monitoring Plan (PRMMP) prior to the commencement of ground-disturbing activities at the Project site. The plan will outline pre-construction coordination, monitoring procedures, emergency discovery procedures, sampling and data recovery, museum storage coordination with an accredited institution or facility for any specimen and data recovered, and final reporting.

PD GEO-2: Worker Environmental Awareness Training: Prior to the start of construction, the PRS or a qualified paleontological monitor will provide an environmental awareness training to all construction personnel involved with ground-disturbing activities. The training will provide information about the potential for encountering fossils during construction, how to identify fossils, and the protocols to follow in the case of any fossil discoveries, including proper notification procedures.

PD GEO-3: Paleontological Monitoring: Prior to construction, the PRS will review the excavation plans to determine whether paleontologically sensitive stratigraphic units may be disturbed by Project-related ground-disturbing activities. Ground-disturbing construction activities and/or areas where the Project will disturb previously undisturbed sediments within sensitive stratigraphic units will be monitored by a qualified paleontological monitor. Monitoring will not take place in areas where the ground has been previously disturbed, in areas underlain by artificial fill, or in areas where exposed sediment will be buried but not disturbed. Monitoring procedures will include measures to suspend monitoring if construction activities are restricted to previously disturbed fill and to adjust monitoring protocols based on updated evaluations of sensitivity subsequent to initial excavations. The PRMMP prepared pursuant to **PD GEO-1** above will outline the site-specific locations for monitoring activities and compliance with those requirements will satisfy the specifics of **PD-GEO-3**.

4.7.6 Laws, Ordinances, Regulations, and Standards[9]

4.7.6.1 Federal

Earthquake Hazards Reduction Act

The U.S. Congress passed the Earthquake Hazards Reduction Act in 1977 to address risks to life and property from future earthquakes through the establishment and maintenance of an earthquake hazards reduction program. The act established the National Earthquake Hazards Reduction Program, which, in November 1990, was amended by the National Earthquake Hazards Reduction Program Act. This act substantially refined agency responsibilities, program goals, and objectives.

[8] Appendix B (g) (16) (E)
[9] Appendix B (i) (1) (A)

4.7.6.2 State

California Building Code

The CBC is codified in Title 24 of the California Code of Regulations, Part 2. The CBC establishes minimum standards related to structural strength, means of egress to facilities (i.e., entering and exiting), and general stability of buildings. The purpose of the CBC is to regulate and control the design, construction, quality of materials, use/occupancy, location, and maintenance of all buildings and structures within its jurisdiction. The provisions of the CBC apply to the construction, alteration, movement, replacement, repair, location, maintenance, and demolition of every building or structure, or any appurtenances connected or attached to such buildings or structures throughout California. The CBC would apply to structures proposed for the Project.

Chapter 18 of the CBC covers the requirements of geotechnical investigations, including expansive soils (Section 1803); excavation, grading, and fills (Section 1804); load-bearing of soils (Section 1806); as well as foundations (Section 1808), shallow foundations (Section 1809), and deep foundations (Section 1810). Chapter 18 requires analysis of slope instability, liquefaction, and surface rupture attributable to faulting or lateral spreading, plus an evaluation of lateral pressures on basement and retaining walls, liquefaction and soil strength loss, and lateral movement or reduction in foundation soil-bearing capacity. It also discusses mitigation measures that can be considered for structural design, including ground stabilization, foundation type and depths, structural systems to accommodate anticipated displacements, or any combination of these measures. The potential for liquefaction and soil strength loss must be evaluated for site-specific, peak ground acceleration magnitudes and source characteristics consistent with the design earthquake ground motions.

If a project is approved, then the project proponent would prepare a site-specific, design-level geotechnical report with recommendations for final project design. The design-level geotechnical report should incorporate the results and recommendations from the preliminary geotechnical report, add further details as needed to address final project design, and include all relevant mitigation measures identified in the CEQA document, conditions of approval, or other agency requirements.

Construction General Permit

Project construction will disturb 1 acre or more of land surface and can affect the quality of stormwater discharges into waters of the United States; therefore, it will be subject to the NPDES General Permit for Stormwater Discharges Associated with Construction and Land Disturbance Activities (Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ). See Section 4.10, *Hydrology and Water Quality*, for additional details.

California Public Utilities Commission General Order 95

General Order 95 of the California Public Utilities Commission applies to construction and reconstruction of overhead and underground electric lines in California, including those proposed as part of the Project. Design of transmission lines must adhere to the National Electric Safety Code. Guidance documents are published by the Institute of Electrical and Electronics Engineers and American Society of Civil Engineers (ASCE), including ASCE 74, *Guidelines for Electrical Transmission Line Structural*

Loading, which states, "transmission structures are not typically designed for vibration caused by earthquakes because these loads are less than that of wind/ice combinations."

CEQA 1970 (Public Resources Code Section 21000 et seq.)

CEQA Guidelines, Article 1, Section 15002(a)(3), states that CEQA is intended to "prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible." CEQA further states that public or private projects financed or approved by the State of California are subject to environmental review by the state. All such projects, unless entitled to an exemption, may proceed only after this requirement has been satisfied. CEQA requires detailed studies that analyze the environmental effects of a proposed project. If a project is determined to have a potential significant environmental effect, the act requires that alternative plans and mitigation measures be considered. If paleontological resources are identified as being within the proposed Project site, the sponsoring agency must take those resources into consideration when evaluating project effects. The level of consideration may vary with the importance of the resource.[10]

Public Resources Code Section 5097.5

No person shall knowingly and willfully excavate upon, or remove, destroy, injure or deface any historic or prehistoric ruins, burial grounds, archaeological or vertebrate paleontological site, including fossilized footprints, inscriptions made by human agency, or any other archaeological, paleontological, or historical feature, situated on public lands, except with the express permission of the public agency having jurisdiction over such lands. Violation of this section is a misdemeanor. As used in this section, "public lands" means lands owned by, or under the jurisdiction of, the state, or any city, county, district, authority, or public corporation, or any agency thereof.

4.7.6.3 Local

Solano County General Plan

The County's General Plan specifies a number of policies or actions to address concerns related to geology, soils, and paleontology. The specific policies and implementation programs of the General Plan are provided below (Solano County 2008):

Chapter 4. Resources

> ***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.*

Chapter 5. Public Health and Safety

> ***Policy HS.P-12:*** *Require new development proposals in moderate or high seismic hazard areas to consider risks caused by seismic activity and to include project features that minimize these risks.*

[10] Appendix B (i) (1) (A)

Policy HS.P-15: *Reduce risk of failure and reduce potential effects of failure during seismic events through standards for the construction and placement of utilities, pipelines, or other public facilities located on or crossing active fault zones.*

Policy HS.P-17: *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.*

Policy HS.P-18: *Make information about soils with a high shrink-swell potential readily available. Require proper foundation designs in these areas.*

Implementation Program HS.I-20: *Require geotechnical evaluation and recommendations before new development 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*

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.

City of Vacaville General Plan

The City's General Plan specifies a number of policies or actions to address concerns related to geology, soils, and paleontology. The specific policies and implementation programs of the General Plan are provided below (City of Vacaville 2015):

Conservation and Open Space Element

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.*

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.*

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*

Solano County Code of Ordinances

Chapter 6.3 Building Standards and Codes, *Section 03 Uniform Codes adopted.* Subject to the modifications and amendments contained in this chapter, the following primary and secondary codes are adopted and incorporated into the Solano County Code by this reference as if fully set forth, and which may be amended from time to time:

(a) The California Building Standards Code, 2022 Edition, known as the California Code of Regulations, Title 24 (CCR, T-24) as adopted by the State of California Legislature, is adopted by reference as the Building Code of the County of Solano, incorporating parts 1, 2, 2.5, 3, 4, 5, 6, 8, 9, and 11, known collectively as the California Building Standards Code and respectively as the California Administrative Code, California Building Code, California Residential Code, the California Electrical Code, the California Mechanical Code, the California Plumbing Code, California Energy Code, the California Fire Code, and the California Green Building Standards Code (Cal Green), and the 2021 International Wildland Urban Interface Code; adopting by reference Title 25, Division 1, Chapter 1, Subchapter 1 of the California Code of Regulations, known as the State Housing Law Regulations; and adopting by reference the Uniform Code for the Abatement of Dangerous Buildings.

(b) Adopting administrative and nonbuilding regulations contained in the above referenced model codes, and further adopting by reference:

1) *The Uniform Code for the Abatement of Dangerous Buildings, 1997 Edition, as published by the International Conference of Building Officials.*
2) *The Uniform Housing Code, 1997 Edition, published by the International Conference of Building Officials as referenced by the California Department of Housing and Community Development, pursuant to provisions of the California Health and Safety Code.*
3) *The International Swimming Pool and Spa Code, 2021 Edition, as published by the International Code Council.*
4) *The Uniform Sign Code, 1997 Edition, as published by the International Conference of Building Officials.*

Chapter 6.4 Sewage Standards, *Section 20 Sewer connection required.*

(a) Connection to a public sewer system shall be required for all proposed lots, new development, additions, or remodels that propose to generate wastewater, and for existing structures requiring repairs to the septic system if sewer is available. Sewer is available if: 1) it is within 200 feet of the

property line, and 2) the structure to be served is within one thousand feet of the property line closest to the sewer or of another structure on the same property that is connected to the sewer, and 3) there is willingness by the agency in control of the sewer to permit connection to the sewer main.

(b) No permit for installation, repair, replacement or expansion of a septic system shall be issued if sewer is available. Exception: permits for repairs to the solid pipe of an on-site sewage disposal system shall be allowed if sewer is available provided that a nuisance is not created or maintained and the repair will comply with these standards.

Chapter 31 Grading, Drainage, Land Leveling, and Erosion Control, *Section 20 Grading and drainage permit requirement.*

(a) Except as exempted in sections 31-21 and 31-22 of this article, no person shall commence or perform any of the following acts: change the topography of any land in such manner that alters or interferes with existing water drainage; fill, close or divert any storm water drainage channel or water course; grade, fill, excavate, or clear vegetation for any purpose without having first obtained a grading and drainage permit from the Resource Management department. A separate permit shall be required for each site and may cover both excavations and fills. When immediate action by a person performing a public service is required to protect life and public property from imminent danger, or to restore, repair, or maintain public works, levees, dikes, utilities, or services destroyed or damaged by natural disaster, serious accident, or other types of emergencies, work bay be commenced prior to obtaining a permit. Notification of any such work must be given to the County on the next business day and an application for a grading permit must be submitted within ten days.

(b) Interference with Public Drainage and Flood Control Facilities. It shall be unlawful for any person to do any of the following acts within the county without first receiving a written permit from the Director.

1) Destroy, remove, damage or interfere with the operation or maintenance of any levee, embankment, channel, dam, reservoir, canal, stream, protective work, access easement or other water delivery, drainage or flood control facility constructed, operated or maintained by any public agency.

2) Place, or cause to be placed in any channel, drainage ditch, water course, conduit, water delivery channel or upon any property over which the county or any public agency within the county has an easement for flood control, water delivery, drainage or access, any rubbish, trash or material of any kind that may interfere with the intended usage of the easement or facility.

3) Use for any purpose or in any manner any levee, embankment, service road, channel, dam, reservoir, canal, protective work or facility constructed by any public agency for flood control, water delivery or drainage, unless permission for the use has been previously granted by the public agency involved.

(d) Approval of a grading and drainage permit will not relieve the applicant from requirements under the law to obtain additional permits from the Department of Resource Management, including

but not limited to building permits and use permits, as well as permits from other local State or Federal agencies.

Section 26 Application procedure for a major grading and drainage permit.

The application for a major grading and drainage permit shall be made in writing on a form prescribed by the Director and shall include all information, plans and maps deemed necessary for a comprehensive review of the project by the county. The application for a major grading and drainage permit shall include but not be limited to the following:

(a) A vicinity map, site map and grading plan as required for a minor grading and drainage permit under section 31-24.

(b) An engineered erosion, sediment and runoff control plan which indicates necessary land treatment, structural measures and timing requirements which will effectively minimize soil erosion, sedimentation and rate of water runoff. The erosion, and sediment and runoff control plan shall contain appropriate information required by this section and as deemed necessary by the Director. The plan shall be prepared under the direction of a registered civil engineer and signed and sealed by the engineer unless this requirement is waived by the Director. Following submittal of the application, the county shall determine the adequacy of the plan and may require the submission of further information when necessary to judge the adequacy of the planned erosion, sediment and runoff control measures. The proposed measures shall incorporate recommendations contained in the Storm Water Quality Handbooks, Construction Site Best Management Practices (BMPs) Manual. The plan shall contain a description of the following:

1) Vegetative measures.
2) Drainage protection and control measures.
3) Erosion and sediment control measures.
4) Runoff control measures.
5) Cut and fill construction.
6) Disposal of excess materials.
7) Stockpiling of materials.
8) Dust control measures.
9) A construction schedule.

(c) A soil engineering report including data regarding the nature, distribution and strength of existing soils, conclusions and recommendations for grading procedures and design criteria for corrective measures when necessary, and opinions and recommendations covering adequacy of sites to be developed by the proposed grading.

(d) An engineering geology report including an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development and opinions and recommendations covering the adequacy of sites to be developed by the proposed grading.

(e) Performance bond.

Section 27 Performance bond.

(a) The Director may require a performance bond to be posted for a major grading and drainage permit when two or more of the following conditions apply:

1) Grading extends into the moratorium.
2) Work endangers the integrity of the Solano County transportation system and facilities within the right of way.
3) Soil import or export exceeds 1000 cubic yards.

(b) If a road maintenance bond has already been posted with the Director as a requirement of another permit the Director may accept the road maintenance bond in lieu of a performance bond.

(c) The performance bond or security must be posted in one of the following forms.

1) A bond furnished by a corporate surety authorized to do business in this state.
2) A cash bond.

(d) Amount of Security. The amount of security shall be based on the number of cubic yards of material in either excavation or fill, whichever is greater, plus the cost of all drainage or other protective devices or work necessary to eliminate geotechnical hazards. That portion of the security valuation based on the volume of material in either excavation or fill shall be computed as 50 percent of the estimated cost of grading work.

When the rough grading has been completed in conformance with the requirements of this Code, the Director may at his or her discretion consent to a proportionate reduction of the security to an amount estimated to be adequate to ensure completion of the grading work, site development or planting remaining to be performed. The costs referred to in this section shall be as estimated by the Director.

(e) Conditions. All security shall include the conditions that the principal shall:

1) Comply with all of the provisions of this Code, applicable laws, and ordinances.

2) Comply with all of the terms and conditions of the grading and drainage permit.

3) Complete all the work authorized by the permit.

(f) Term of Security. The term of each security shall begin upon the filing thereof with the Director and the security shall remain in effect until the work authorized by the grading and drainage permit is completed and approved by the Director.

(g) Default Procedures. In the event the applicant or the applicant's agent shall fail to complete the work or fail to comply with all terms and conditions of the grading and drainage permit, it shall be deemed a default has occurred. The Director shall give notice thereof to the principal and security or financial institution on the grading and drainage permit security, or to the applicant in the case of a cash deposit or assignment, and may order the work required to complete the grading in conformance with the requirements of this Code be performed. The surety or financial institution executing the security shall continue to be firmly bound under an obligation up to the full amount

of the security, for the payment of all necessary costs and expenses that may be incurred by the Director in causing any and all such required work to be done. In the case of a cash deposit or assignment, the unused portion of such deposit or funds assigned shall be returned or reassigned to the person making said deposit or assignment.

Section 31 National Pollution Discharge Elimination System (NPDES).

All grading plans and permits with land disturbance equal to or greater than 1 acre shall comply with the provisions of this section for NPDES compliance.

(a) No grading and drainage permit shall be issued unless the plans for such work include a Storm Water Pollution Prevention Plan with details of best management practices, including desilting basins or other temporary drainage or control measures, or both, as may be necessary to control construction-related pollutants which originate from the site as a result of construction related activities.

(b) All best management practices shall be installed before grading begins. As grading progresses, all best management practices shall be maintained in good working order to the satisfaction of the Director unless final grading approval has been granted by the Director and all permanent drainage and erosion control systems, if required, are in place.

Section 41 Inspection and enforcement.

The provisions of this chapter shall be enforced by the Director who shall require inspection of all work and require compliance with all the provisions of the chapter. Whenever necessary to make an inspection to enforce any provision of this chapter, or whenever the Director has reasonable cause to believe that there exists on any private property a condition or activity which requires a permit as specified by this chapter, the Director may enter such property at all reasonable times to inspect the same or to perform any duty imposed upon the Director by this chapter.

City of Vacaville Municipal Code

Title 14 Land Use and Development Code, *Division 14.19, Grading, Section 14.19.240.020, Purpose and Scope.*

A. This division is enacted to regulate grading on property within the City limits of the City of Vacaville in order to accomplish the following purposes:

1. *To safeguard life, limb, health, property, environment, and natural resources and to promote the public welfare; however, this division is not intended to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by its terms;*
2. *To ensure that the intended use of the graded site is consistent with the policies of the Land Use and Safety Elements of the General Plan and all applicable City ordinances and regulations;*
3. *To establish uniform engineering standards and procedures for grading, soil stabilization, erosion control protection, excavation and earthwork construction, including fills and embankments, and to allow reasonable deviations from these standards;*

4. *To establish administrative procedures for the issuance of permits and provide for the approval of plans, specifications, and the inspection of grading construction;*
5. *To supplement the grading regulations within the Uniform Building Code;*
6. *To avoid the disruption of natural or City authorized drainage flows caused by the activities of clearing and grubbing, grading, filling and excavation of land;*
7. *To avoid the degradation or pollution of watercourses with nutrients, sediments, or other materials and/or pollutants generated by new development and redevelopment;*
8. *To minimize increases in storm water runoff from development and redevelopment in order to reduce flooding, siltation, increases in stream temperature, and streambank erosion, and to maintain the integrity of stream channels;*
9. *To meet the requirements of state and federal law and the City's NPDES General Permit CAS000004 WDRs for storm water discharges from small municipal separate storm sewer systems.*

B. Scope. This division sets forth rules and regulations to control land disturbances, landfill, soil storage, pollution, and erosion and sedimentation resulting from new development and redevelopment, and establishes procedures for the issuance, administration and enforcement of permits for such activities. Except as exempted in Section 14.19.242.010, any grading within the City limits of the City of Vacaville as defined herein shall conform to the provisions of this division and other applicable provisions of the City's Land Use and Development Code.

4.7.7 Agencies and Agency Contacts[11]

The Solano County Division of Public Works (Department of Resource Management) is responsible for enforcing compliance with local building standards and the CBC in unincorporated Solano County. However, the CEC has exclusive jurisdiction over compliance with building standards as applied to buildings and structures for the Project. Several agencies are involved with evaluating and establishing risk levels associated with geologic hazards and resources. These agencies include the California Geological Survey, Regional Water Quality Control Board-Central Valley Division, and Solano County. Agencies and contacts are provided in Table 4.7-6.

Table 4.7-6. Geology, Soils, and Paleontology Agencies and Contacts

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Division of Public Works Solano County Department of Resource Management 675 Texas Street, Suite 5500 Fairfield, CA 94533-6341	Daniel Santos (707) 784-3155 grading@solanocounty.com	County Grading Permit
California Geological Survey 715 P Street, MS 1901 Sacramento, CA 95814	Jeremy Lancaster State Geologist (916) 445-1825 cgshq@conservation.ca.gov	Defining zones of required investigation related to earthquake hazards.

[11] Appendix B (i) (1) (B), and Appendix B (i) (2)

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Central Valley Regional Water Quality Control Board (RWQCB), Region 5 11020 Sun Center Drive, Suite 200 Rancho Cordova, CA 95670	Danielle Goode (916) 464-4843 Danielle.Goode@waterboards.ca.gov	Clean Water Act Section 401, RWQCB Waste Discharge Requirement (as applied to erosion and sediment control).

4.7.8 Required Permits and Permitting Schedule[12]

Agency-required permits and permit acquisition schedules related to geologic and soil resources are summarized below in Table 4.7-7. Agencies will be contacted to obtain the necessary permits at the appropriate time.

Table 4.7-7. Permit Schedule

Permit/Approval Required	Schedule
Construction General Permit Registration with the State's National Pollutant Discharge Elimination System permit for Stormwater Discharges Associated with Construction Activities	• Prepare Stormwater Pollution Prevention Plan (2 months) • File for Waste Discharge Identification number (1 month) • File Notice of Intent and required documents (1 month) • Pay applicable fees

4.7.9 References

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[12] Appendix B (i) (3)

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USEPA (United States Environmental Protection Agency). 1995. Compilation of Air Pollutant Emission Factors Volume I: Stationary Point and Area Sources. AP-42. Fifth Edition, January 1995.

USGS (U.S. Geological Survey). 2024. Areas of Land Subsidence in California. A web-based geospatial tool. Available online at: https://ca.water.usgs.gov/land_subsidence/ california-subsidence-areas.html (accessed August 2024).

4.8 Greenhouse Gas Emissions

This section identifies and evaluates issues related to greenhouse gas (GHG) emissions that could occur as a result of implementation of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment. In addition, a project-specific GHG emissions evaluation was completed as part of the Air Quality and Greenhouse Gas Emissions Analysis for the Project (Appendix 4.3-A).

4.8.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?			X	
2.	Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases.				X

4.8.2 Affected Environment[1]

4.8.2.1 The Greenhouse Effect

Certain gases in the earth's atmosphere, classified as GHGs, play a critical role in determining the earth's surface temperature. A GHG is any gas in the atmosphere that absorbs infrared radiation. As solar radiation enters the earth's atmosphere, a portion of the radiation is absorbed by the earth's surface, and a portion is reflected back through the atmosphere into space. The absorbed radiation is eventually emitted from the earth into the atmosphere as infrared radiation. Most solar radiation passes through GHGs; infrared radiation is selectively absorbed or "trapped" by GHGs as heat and then reradiated back toward the earth's surface, warming the lower atmosphere and the earth's surface. This phenomenon, known as the "greenhouse effect," is beneficial for maintaining a habitable climate on the earth. As the atmospheric concentrations of GHGs rise, however, the average temperature of the lower atmosphere gradually increases, thereby increasing the potential for indirect effects such as a decrease in precipitation as snow, a rise in sea level, and changes to plant and animal species and habitat.

Whereas pollutants with localized air quality effects have relatively short atmospheric lifetimes (about one day), GHGs have long atmospheric lifetimes (one year to several thousand years) and persist in the atmosphere long enough to be dispersed globally. Although the exact lifetime of any particular

[1] Appendix B (g) (1)

GHG molecule depends on multiple variables and cannot be pinpointed, scientific evidence reveals that more carbon dioxide (CO_2) is emitted into the atmosphere then is sequestered by ocean uptake, vegetation, and other forms of sequestration. Of the total annual human-caused CO_2 emissions, approximately 54 percent is sequestered through ocean uptake, uptake by northern hemisphere forest regrowth, and other terrestrial sinks within a year, whereas the remaining 46 percent of human-caused CO_2 emissions remains stored in the atmosphere. The quantity of GHGs that it takes to ultimately result in climate change is not known precisely, although scientific evidence strongly indicates no single project would be expected to contribute measurably to a noticeable incremental change in the global average temperature.

4.8.2.2 Greenhouse Gases and Global Warming Potential

GHGs are emitted by natural processes and human activities. Natural GHG sources include decomposition of dead organic matter; respiration of bacteria, plants, animals, and fungus; evaporation from oceans; and volcanic outgassing. Human activities known to emit GHGs include fuel combustion, industrial manufacturing, utilities, transportation, residential, and agricultural activities. The primary GHGs that enter the atmosphere because of human activities are CO_2, methane (CH_4), nitrous oxide (N_2O), fluorinated carbons (hydrofluorocarbons [HFCs], perfluorocarbons [PFCs], and sulfur hexafluoride [SF_6]).

CO_2 is an odorless, colorless gas with both natural and anthropogenic sources. CO_2 is the most important and common anthropogenic GHG. Examples of natural sources are respiration of bacteria, plants, and animals, evaporation from oceans, and decomposition of organic matter. Human activities that emit CO_2 include burning coal, oil, natural gas, and wood. Prior to the Industrial Revolution, CO_2 levels remained at approximately 280 parts per million for close to 6,000 years of human civilization. The recorded monthly average for May 2024 was 426.7 parts per million (NOAA 2024).

CH_4 is a flammable gas that is the main component of natural gas. When burned in the presence of oxygen, CO_2 and water are released. There are no direct health effects from exposure to CH_4. Sources of CH_4 include decay or organic material, natural gas fields, cattle, and landfills.

N_2O is a colorless gas that can cause euphoria, dizziness, and slight hallucinations when exposed to higher concentrations. Sources include agricultural sources (e.g., microbial processes in soil and water, fertilizer) and industrial processes (e.g., fossil fuel–fired power plants, vehicle emissions, nylon production).

Fluorinated Gases are synthetic and emitted from a variety of industrial processes:

- **HFCs** are human-made chemicals used as a substitute for chlorofluorocarbons (CFCs) for automobile air conditioners and refrigerants. Because HFCs destroy stratospheric ozone, their production was stopped as required by the 1989 Montreal Protocol.
- **PFCs** are very stable and do not break down through the chemical processes in the lower atmosphere and have long lifetimes (between 10,000 and 50,000 years). The two main sources of PFCs are primarily aluminum production and semiconductor manufacturing.

- **SF_6** is an inorganic, colorless, odorless, nontoxic, nonflammable gas used for insulation in electric power transmission and distribution equipment, semiconductor manufacturing, the magnesium industry, and as a tracer gas for leak detection.

Global Warming Potential

The Intergovernmental Panel on Climate Change (IPCC) developed the global warming potential (GWP) concept to compare the ability of each GHG to trap heat in the atmosphere relative to CO_2, which is used as a reference gas. The GWP of a GHG is defined as the ratio of the time-integrated radiative forcing from the instantaneous release of one kilogram of a trace substance relative to that of one kilogram of CO_2. Therefore, GWP-weighted emissions are measured in metric tons (MT) of carbon dioxide equivalent (CO_2e). The GWP for CH_4 is approximately 25 times more powerful than CO_2 and that of N_2O approximately 298 times more powerful than CO_2 in their ability to trap heat in the atmosphere (CO_2 has a GWP of 1). SF_6 has a GWP of 22,800. CO_2e is a quantity that enables all GHG emissions to be considered as a group despite their varying GWP. The GWP of each GHG is multiplied by the prevalence of that gas to produce CO_2e. These GWPs have been adopted by the U.S. Environmental Protection Agency (USEPA) into 40 Code of Federal Regulations (CFR) 98

Mandatory Greenhouse Gas Reporting

Historically, GHG emission inventories have been calculated using the GWPs from the IPCC's Second Assessment Report (SAR). In 2007, IPCC updated the GWP values based on the latest science at the time in its Fourth Assessment Report (AR4; IPCC 2007). The updated GWPs in the IPCC AR4 are used in recent GHG emissions inventories. In 2013, IPCC again updated the GWP values based on the latest science in its Fifth Assessment Report (AR5) (IPCC 2013). This was followed by the Sixth Assessment Report (AR6), which was finalized in March 2023. However, United Nations Framework Convention on Climate Change (UNFCCC) reporting guidelines for national inventories require the use of GWP values from the AR4. To comply with international reporting standards under the UNFCCC, official emission estimates for California and the U.S. are reported using AR4 GWP values, and statewide and national GHG inventories have not yet updated their GWP values to the AR6 values. Therefore, this analysis was completed using the GWP values from AR4. By applying the GWP ratios, project-related CO_2e emissions can be tabulated in metric tons per year. Typically, the GWP ratio corresponding to the warming potential of CO_2 over a 100-year period is used as a baseline. The atmospheric lifetime and GWP of selected GHGs are summarized in Table 4.8-1, *Global Warming Potentials and Atmospheric Lifetimes*.

Table 4.8-1. Global Warming Potentials and Atmospheric Lifetimes

Greenhouse Gas	Atmospheric Lifetime (years)	Global Warming Potential (100-year time horizon)
Carbon Dioxide (CO_2)	50-200	1
Methane (CH_4)	12	25
Nitrous Oxide (N_2O)	114	298
HFC-324a	14	1,430
PFC: Tetrafluoromethane (CF_4)	50,000	7,390
PFC: Hexafluoroethane (C_2F_6)	10,000	12,200
Sulfur Hexafluoride (SF_6)	3,200	22,800

Source: IPCC 2007
HFC – hydrofluorocarbon; PFC – perfluorocarbon

4.8.3 Environmental Analysis[2,3,4]

4.8.3.1 Methodology

A GHG analysis is required to be included in CEQA documents for all non-exempt projects. GHG emissions for construction and operation were calculated using the California Emissions Estimator Model (CalEEMod) as provided in Appendix 4.3-A. The Yolo Solano Air Quality Management District (YSAQMD) and Solano County have not established a quantitative threshold of significance for GHGs. Therefore, the interim threshold of 900 MT CO_2e per year for operational emissions of industrial projects proposed by the California Air Pollution Control Officers Association (CAPCOA) is used herein (CAPCOA 2008).

Construction

For this Project, the major source of GHGs is the combustion of fuel in off-road construction equipment, in vehicles used to haul equipment and materials, and in vehicles used by workers commuting to and from the site.

There are three types of GHGs from fuel combustion, including CO_2, CH_4, and N_2O. GHG emissions are presented as CO_2e, which is computed based on the warming potential relative to CO_2. The CH_4 global warming equivalence is 25 times that of CO_2, and the N_2O global warming equivalence is 298 times that of CO_2. Mathematically, CO_2e can be represented by the following equation:

$$CO_2e \text{ Emissions} = CO_2 \text{ Emissions} + 25 \times CH_4 \text{ Emissions} + 298 \times N_2O \text{ Emissions}$$

CalEEMod was used to estimate the GHG emissions during the construction phase of the Project. Based on the construction schedule, and the types and quantities of construction equipment and haul trucks, the maximum CO_2e emissions were estimated. For typical diesel-fueled combustion equipment used in construction activities, the emissions factors adjusted with global warming equivalence are the following:

1. CO_2 emission factors are 22.4 pounds of CO_2e per gallon consumed;
2. CH_4 emission factors are 0.065 pound of CO_2e per gallon consumed; and
3. N_2O emission factors are 0.068 pound of CO_2e per gallon consumed.

Operation

GHG emissions during operation would result from the operation of vehicles traveling to the site for operations and maintenance (O&M) and energy consumption. These emissions were estimated using CalEEMod. GHG emissions are also associated with fugitive emissions of refrigerant leaks (R-134a) and SF_6 from gas-insulated switchgear equipment, such as the high-voltage circuit breakers at the on-site Project substation. The SF_6 global warming equivalence is 22,800 times that of CO_2. The Project will have four 245-kilovolt (kV) high-voltage circuit breakers, each with 125 pounds of SF_6 for a total of 500

[2] Appendix B (g) (1)
[3] Appendix B (g) (8) (A)
[4] Appendix B (g) (8) (I), Appendix B (g) (8) (I) (i), Appendix B (g) (8) (I) (ii)[5] Appendix B (g) (8) (E)

pounds, and a maximum leak rate of 0.5 percent per year. CO_2e resulting from SF_6 gas leakage can be represented by the following equation:

CO_2e Emissions = SF_6 gas contained in equipment (500 lbs) x 0.5 percent leak rate x 0.0004536 MT/lb x 22,800 = 25.86 MT/year

4.8.3.2 CEQA Impact Analysis[5]

IMPACT 4.8-1: Would the project generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment? (Less Than Significant Impact)

Construction Emissions

The Project's temporary construction emissions for GHGs were estimated using CalEEMod and are presented in Table 4.8-2. Direct GHG emissions from construction activities are generated from vehicle engine exhaust from construction equipment and vendor trips, construction worker commuting trips, and the stationary generators to be used during construction. CalEEMod also calculates indirect GHG emissions from electricity generation. Due to the temporary nature of construction-related activities, the resulting GHG emissions are considered short term and are amortized over a 30-year project lifetime period and added to the operation phase emissions for comparison to the significance threshold (SCAQMD 2008). The complete CalEEMod output is provided in Appendix 4.3-A.

Table 4.8-2. Construction Total GHG Emissions (CO_2e)

Year	CO_2 MT/yr	CH_4 MT/yr	N_2O MT/yr	CO_2e MT/yr[1/]
2024	2,202	0.05	0.19	2,259
Total Construction GHG (CO_2e) Amortized Annual Emissions over 30 Years				**75**

1/ CO_2e Emissions = Construction GHG Emissions x Global Warming Equivalent Factor

CO_2 – carbon dioxide; CO_2e – carbon dioxide equivalent; CH_4 – methane; GHG – greenhouse gas; N_2O – nitrogen oxides

Project construction will generate a total of 2,259 MT of CO_2e for the entire construction period, which is equivalent to 75 MT per year when amortized over the 30-year Project lifetime.

Operational Emissions

Direct emissions of GHGs from Project operation will be generated through motor vehicle trips to and from the Project site, occasional use of heavy-duty trucks, waste generation, electricity use, and water use. Up to six workers will be required to support onsite and offsite O&M and administrative support functions. Onsite O&M activities will 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 will likely occur infrequently. One major maintenance inspection will also take place annually, requiring approximately 20 personnel for approximately one week. In addition, approximately every 2 to 3 years the Project will require battery augmentation to maintain Project capacity; a crew of approximately 20 additional workers will be onsite for approximately 3 months to install and connect additional batteries. The GHG emissions

[5] Appendix B (g) (8) (E)

associated with long-term operation of the Project were estimated using methodologies described above. Table 4.8-3 provides a summary of the Project's operational GHG emissions. The complete CalEEMod output is provided in Appendix 4.3-A.

Table 4.8-3. Operation Total GHG Emissions (CO_2e)

Category	CO_2 MT/yr	CH_4 MT/yr	N_2O MT/yr	SF_6 MT/yr
Operational GHG Emissions	3.42	0.0003	0.0002	0.0011
Global Warming Equivalence Factor	1	25	298	22,800
Equivalent CO_2e Emissions[1/]	3.42	0.01	0.06	25.86
Total Operational GHG Emissions	*29*			
Total Operational GHG Emissions + Amortized Construction GHG Emissions	**104**			

1/ Equivalent CO_2e Emissions = Construction GHG Emissions x Global Warming Equivalent Factor

CO_2 – carbon dioxide; CO_2e – carbon dioxide equivalent; CH_4 – methane; GHG – greenhouse gas; N_2O – nitrogen oxides; SF_6 – sulfur hexafluoride

As shown in Table 4.8-3, estimated annual Project-operational GHG emissions will be approximately 29 MT CO_2e per year as a result of Project operation. Estimated maximum annual operational emissions and amortized construction emissions will be approximately 104 MT CO_2e per year. The total annual emissions will not exceed the proposed interim GHG significance threshold of 900 MT CO_2e per year. Because the Project's GHG emissions will not result in a cumulatively considerable contribution, the Project will result in a less than significant cumulative impact in terms of climate change.

The Project will also 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), a supervisory control and data acquisition system, and other energy-consuming equipment. Based on the total BESS storage capacity of 1,200 megawatt-hours (MWh), approximately 1,343 MWh of grid electric energy will be drawn for each full charging cycle, of which approximately 143 MWh will be lost due to round-trip losses. Each of the Project's 384 battery modules will also be equipped with a TMS that provides cooling (or heating) of the battery modules as required to maintain the allowable operating temperature range. The total auxiliary load, including TMS and other energy consumption, is estimated to be 7.68 megawatts.

Conservatively assuming up to 365 full charging cycles per year, transmission and BESS charging losses may result in a total energy loss of up to 52,053 MWh of grid electric energy per year. Assuming that the BESS operates for an average of 8 hours per day (one charge and discharge cycle), BESS auxiliary systems are estimated to consume approximately 24,840 MWh of grid electric energy per year.

Table 4.8-4 presents the estimated indirect GHG emissions during operation of the Project, based on default GHG emission factors provided by CalEEMod for the Pacific Gas and Electric Company (PG&E), which serves Solano County. One of the key objectives of the Project is to allow for an increased percentage of renewable energy use, reducing GHG emissions by storing renewable energy for use during times when demand exceeds renewable energy generation. Therefore, the indirect emission estimates presented in this analysis are conservative since they are based on current PG&E GHG emission factors. Although the conservatively estimated indirect GHG emissions would be greater

than the proposed interim GHG significance threshold of 900 MT CO_2e per year, that threshold is intended to apply only to direct, rather than indirect, GHG emissions from a project.

Table 4.8-4. Estimated Indirect Operational Greenhouse Gas Emissions

CalEEMod Electric Utility GHG Emission Factors	CO_2	CH_4	N_2O
	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	4,816	0.78	0.09
Indirect GHG Emissions from Auxiliary Loads	2,298	0.37	0.05
Total Indirect GHG Emissions from BESS Operation	7,115	1.15	0.14
Global Warming Equivalence Factor	1	25	298
Equivalent CO_2e Emissions[1]	7,115	28.77	41.57
Total Indirect Operational GHG Emissions (CO_2e)	7,185		

IMPACT 4.8-2: Would the project conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases? (No impact)

The Climate Action Plan (CAP) adopted by Solano County provides numerous measures and actions that the community can take to reduce both emissions and communitywide contributions to global climate change. These measures and actions are organized according to five strategy-sectors: Agriculture, Transportation and Land Use, Energy Use and Efficiency, Water Use and Efficiency, and Waste Reduction and Recycling. The CAP also includes a GHG emissions reduction target of 20 percent below 2005 baseline emission levels by 2020 (Solano County 2011). However, the County has not updated the CAP since 2011, and it does not provide future GHG reduction targets for years beyond 2020. The Project will support achievement of the County's GHG reduction goals in the CAP, primarily related to the Energy Use and Efficiency sector, by expanding energy availability for use within the County.

The 2022 California Air Resources Board (CARB) Scoping Plan for Achieving Carbon Neutrality (Scoping Plan; CARB 2022a) lays out a roadmap for achieving carbon neutrality in California by 2045 or sooner. The Plan addresses recent legislation and extends and expands upon earlier CARB plans with a target of reducing anthropogenic emissions to 85 percent below 1990 levels by 2045. The carbon neutrality goal is new in the 2022 Plan and proposes both emissions reductions as well as capture and storage. According to the Scoping Plan, the estimated generation and storage resources needed to meet future electric demand with zero-carbon energy sources will include approximately 37 gigawatts of battery storage by 2045. The Scoping Plan also acknowledges that build rates for new battery storage projects over the period 2022-2035 will need to increase, compared to historical maximum rates. The proposed Project will substantially increase local energy storage capacity, and will help address the limitations of the electrical grid's current ability to maintain reliability as the proportion of renewable energy sources increases. Layering energy storage systems into the energy grid improves grid reliability and makes it more resilient to disturbances and peaks in energy demand. The Project and other energy

storage systems are used to supply power during brief disturbances, reduce outages and associated impacts to the community, and substitute for certain large footprint transmission and disruption upgrades. The Project will not result in population growth and is generally in character with adjacent development. While the Project will include full-time workers as well as additional staff for O&M activities, it will not affect the transportation and land use patterns analyzed or assumed in long-range planning conducted by the San Francisco Bay region's two regional planning agencies, the Metropolitan Transportation Commission (MTC) and Association of Bay Area Governments (ABAG). The most recent 30-year plan, *Plan Bay Area 2050*, prepared to meet the mandates of the *Sustainable Communities and Climate Protection Act of 2008* (SB 375), contains 35 elements of the area's sustainable community strategy to improve housing, the economy, transportation, and the environment across the Bay Area's nine counties (MTC and ABAG 2021).

Therefore, the Project will not conflict with applicable plans, policies, and regulations related to GHG emission reductions, and the impact will be less than significant.

4.8.3.3 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kilovolt generation tie (gen-tie) line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

These improvements are included in the analysis above, such that they will not be significant to the environment. The improvements will also not affect any plan, policy, or regulation regarding the reduction of GHG emissions. No mitigation will be required.

4.8.4 Cumulative Effects[6,7]

Impacts from GHG emissions are inherently cumulative, that is, significant and adverse. Accordingly, the significance of GHG emissions in this analysis is determined based on whether such emissions would have a cumulatively considerable impact on global climate change. Although the geographic scope of cumulative impacts related to GHG emissions is global, this analysis focuses on the Project's direct and/or indirect generation or offset of GHG emissions on the region and the state. CAPCOA considers GHG impacts to be exclusively cumulative impacts, in that no single project could, by itself, result in a substantial change in climate (CAPCOA 2008). Therefore, the evaluation of cumulative GHG impacts presented above evaluated whether the Project would make a considerable contribution to cumulative climate change effects. The Project will result in a net reduction in GHG emissions from

[6] Appendix B (g) (1)
[7] Appendix B (g) (8) (I), Appendix B (g) (8) (I) (iii)

power generation and will not conflict with the state's GHG reduction goals. Therefore, the Project-specific incremental impact on GHG emissions will not be cumulatively considerable.

4.8.5 Mitigation Measures[8]

No mitigation measures are required.

4.8.6 Laws, Ordinances, Regulations, and Standards[9]

4.8.6.1 Federal

The U.S. Supreme Court ruled on April 2, 2007, that CO_2 is an air pollutant as defined under the Clean Air Act (CAA), and that the USEPA has the authority to regulate emissions of GHGs. Responding to the mounting issue of climate change, the USEPA has taken actions to regulate, monitor, and potentially reduce GHG emissions.

Mandatory Greenhouse Gas Reporting Rule

On September 22, 2009, the USEPA issued a final rule for mandatory reporting of GHGs from large GHG emissions sources in the United States (40 CFR 98). In general, this national reporting requirement will provide the USEPA with accurate and timely GHG emissions data from facilities that emit 25,000 MT or more of CO_2 per year. These publicly available data allow the reporters to track their own emissions, compare them to similar facilities, and help identify cost-effective opportunities to reduce emissions in the future. Reporting is at the facility level, except that certain suppliers of fossil fuels and industrial GHGs along with vehicle and engine manufacturers report at the corporate level. An estimated 85 percent of the total United States GHG emissions, from approximately 10,000 facilities, are covered by this final rule.

Endangerment and Cause or Contribute Findings for GHGs under the CAA

On December 7, 2009, the USEPA adopted its Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA (Endangerment Finding). The Endangerment Finding is based on Section 202(a) of the CAA, which states that the Administrator (of USEPA) should regulate and develop standards for "emission[s] of air pollution from any class of classes of new motor vehicles or new motor vehicle engines, which in [its] judgment cause, or contribute to, air pollution which may reasonably be anticipated to endanger public health or welfare." The rule addresses Section 202(a) in two distinct findings. The first addresses whether the concentrations of the six key GHGs (CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6) in the atmosphere threaten the health and welfare of current and future generations. The second addresses whether the combined emissions of GHGs from new motor vehicles and motor vehicle engines contribute to atmospheric concentrations of GHGs and therefore the threat of climate change.

The Administrator found that atmospheric concentrations of GHGs endanger the public health and welfare within the meaning of Section 202(a) of the CAA. The evidence supporting this finding consists of human activity resulting in "high atmospheric levels" of GHG emissions, which are most likely

[8] Appendix B (g) (8) (K)
[9] Appendix B (i) (1) (A)

responsible for increases in average temperatures and other climatic changes. Furthermore, the observed and projected results of climate change (e.g., higher likelihood of heat waves, wildfires, droughts, sea level rise, and higher intensity storms) are a threat to the public health and welfare. Therefore, GHGs were found to endanger the public health and welfare of current and future generations.

The Administrator also found that GHG emissions from new motor vehicles and motor vehicle engines are contributing to air pollution, which is endangering public health and welfare. USEPA's final findings respond to the 2007 U.S. Supreme Court decision that GHGs fit within the CAA definition of air pollutants. The findings do not in and of themselves impose any emission reduction requirements but rather allow the USEPA to define the GHG standards proposed earlier in 2009 for new light-duty vehicles as part of the joint rulemaking with the U.S. Department of Transportation.

Various subsequent federal rulemakings limit GHG emissions from fossil fuel-fired power plants through USEPA's major stationary source permitting program and through USEPA's New Source Performance Standards. These rulemakings have been subject to court challenges and political manipulation, such that applicants for air permits are required to evaluate the current status of the regulatory requirements. These GHG rules do not apply to the activities associated with the Project.

Presidential Executive Orders 13990 and 14008

Executive Order 13990 (Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis), issued on January 20, 2021, directs all federal executive departments and agencies to immediately review and take action to address the promulgation of federal regulations and other actions that conflict with important national objectives and to immediately commence work to confront the climate crisis (86 *Federal Register* 7037; 2021).

Executive Order 14008 (Tackling the Climate Crisis at Home and Abroad), issued on January 27, 2021, declares the Administration's policy to build resilience against the impacts of existing climate change and projected changes according to current trajectories in both the United States and with other countries abroad (86 *Federal Register* 7619; 2021).

4.8.6.2 State

While climate change has been a concern since at least 1988, the efforts devoted to GHG emissions reduction and climate change policy have increased dramatically in recent years. In 2002, California passed Assembly Bill (AB) 1493, which requires the CARB to develop and implement regulations to reduce automobile and light truck GHG emissions beginning with the 2009 model year. In June 2005, Executive Order S-3-05 was signed to reduce California's GHG emissions to: (1) 2000 levels by 2010; (2) 1990 levels by the 2020; and (3) 80 percent below the 1990 levels by the year 2050. In 2006, this goal was further reinforced with the passage of AB 32, the Global Warming Solutions Act of 2006. AB 32 sets the same overall GHG emissions reduction goals while further mandating that the CARB create a plan (Scoping Plan), which includes market mechanisms, and implement rules to achieve "real, quantifiable, cost-effective reductions of greenhouse gases." CARB's 2022 Scoping Plan (CARB 2022a) was prepared to address climate legislation passed since the last scoping plan, which was prepared in 2017. The Scoping Plan addresses AB 1279, Senate Bill (SB) 905, SB 1065, SB 1075, and other

legislation and executive orders addressing GHG reductions in various manufacturing sectors and managing natural lands. SB 32 codifies the emissions reduction goal of 40 percent below 1990 levels by 2030.

In 2022, California passed AB 1279 (California Crisis Act), which introduced a statewide policy to "achieve net zero greenhouse gas emissions as soon as possible, but no later than 2045, and achieve and maintain net negative greenhouse gas emissions thereafter, and to ensure that by 2045, statewide anthropogenic greenhouse gas emissions are reduced to at least 85% below the 1990 levels." The bill would require the state board to work with relevant state agencies to ensure that updates to the scoping plan identify and recommend measures to achieve these policy goals and to identify and implement a variety of policies and strategies that enable CO_2 removal solutions and carbon capture, utilization, and storage technologies in California, as specified.

AB 32 requires the state to create an opportunity for interested parties to comment on the Scoping Plan by conducting public workshops. It is required to conduct a portion of these workshops in regions with low-income communities and minority populations. SB 1020 (2022) would instead include "federal extreme nonattainment areas that have communities with minority populations, communities with low-income populations, or both" as regions for these workshops. Additionally, this bill would "accelerate the timeline required to have 100 percent renewable energy and zero carbon energy procured to serve state agencies from the original target year of 2045 to 2035."

SB 905 requires the state board, along with appropriate state and local agencies to "adopt regulations for a unified permit application for the construction and operation of carbon dioxide capture, removal, or sequestration projects" by January 1, 2025.The state board is required to develop a public database to track such projects.

SB 1075 requires the state board to specify information relative to the deployment, development, and use of hydrogen as part of the evaluation posted to the state board's internet website by June 1, 2024. Additionally, the Energy Commission is expected "to study and model potential growth for hydrogen and its role in decarbonizing" as part of the 2023 and 2025 editions of the integrated energy policy report.

SB 1206 mandates a stepped sales prohibition on newly produced high-GWP HFCs to transition California's economy toward recycled and reclaimed HFCs for servicing existing HFC-based equipment. Additionally, SB 1206 also requires CARB to develop regulations to increase the adoption of very low, i.e., GWP < 10, and no-GWP technologies in sectors that currently rely on higher-GWP HFCs.

In 2002, SB 1078 established a Renewable Portfolio Standard (RPS), which required an annual increase in renewable generation by the utilities with a goal of 20 percent by 2010. SB X1-2 expanded the RPS by establishing a renewable energy target of 20 percent of the total electricity sold to retail customers in California per year by 2013, and 33 percent by 2020 and subsequent years. SB 350 further expanded the RPS by establishing a goal of 50 percent of the total electricity sold to retail customers in California per year by 2030. SB 100 mandates that the California Public Utilities Commission (CPUC), CEC, and CARB plan for 100 percent of total retail sales of electricity in California to come from eligible renewable energy resources and zero-carbon resources by December 31, 2045. The statute requires these agencies to issue a joint policy report on SB 100 every 4 years. The first of these reports was

issued in 2021. This Scoping Plan reflects the SB 100 Core Scenario resource mix with a few minor updates. This bill also updates the state's RPS to include the following interim targets:

- 44 percent of retail sales procured from eligible renewable sources by December 31, 2024;
- 52 percent of retail sales procured from eligible renewable sources by December 31, 2027; and
- 60 percent of retail sales procured from eligible renewable sources by December 31, 2030

SB 97 acknowledges that climate change is a prominent environmental issue that requires analysis under CEQA. CEQA requires that lead agencies consider the reasonably foreseeable adverse environmental effects of projects they are considering for approval. GHG emissions can affect the environment adversely because they contribute, cumulatively, to global climate change. Thus, GHG emissions and impacts require consideration in CEQA documents.

Effective January 1, 2022, CARB proposed an amendment to the Regulation for Reducing Greenhouse Gas Emissions from Gas-Insulated Equipment (CARB 2022b). The full regulatory context for the Regulation can be found in the legal edition of Title 17, California Code of Regulations (CCR), sections 95350-95359.1. The purpose of this regulation is to achieve GHG emission reductions from the operation of electrical equipment such as circuit breaker that uses a GHG as an insulating medium. The provisions apply to owners of gas-insulated equipment (GIE) such that uses covered insulating gas. Pursuant to amendment Division 3, Chapter 1, Subchapter 10, Article 4, Subarticle 3.1 Section 95352. Sulfur Hexafluoride Phase-Out, subsection (a)3, the owner of a SF_6 GIE can be exempt from the applicability of this regulation if the GIE device was purchased prior to the applicable phase-out date and has entered California no later than 24 months after the purchase date. The Project is currently proposing to purchase four 245-kV circuit breakers. According to Table 2 of Section 95352(a)4, SF_6 GIE with voltage capacity greater than 145 kV but less than or equal to 245 kV with a short-circuit current rating of less than 63 kilo-amperes has a phase-out date of January 1, 2027. Therefore, the Project will comply with the regulation because all circuit breakers will be purchased prior to January 1, 2027, and will be relocated to California within 24 months of the effective date. Any GIE purchased after this date will comply with current regulations at the time of purchase.

4.8.6.3 Regional Regulations and Plans

Solano County General Plan

The Solano County General Plan includes the following goals, policies, and implementation measures that are relevant to the Project, and specifically to reduce GHG emissions. Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable County General Plan goals, policies, and implementation measures as related to GHG emissions.

Resources Element

> ***Implementation Program RS.I-49:*** *Require all off-road diesel powered vehicles used for construction to be newer model, low-emission vehicles, or use retrofit emission control devices, such as diesel oxidation catalyst and diesel particulate filters verified by the California Air Resources Board.*

Health and Safety Element

> ***Policy HS.P-47:*** *Promote GHG 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.*

City of Vacaville General Plan

The City of Vacaville General Plan includes the following goal and policy that are relevant to the gen-tie line, and specifically to reduce GHG emissions. Refer also to Section 4.11, *Land Use and Planning*, of this application for additional information regarding land use consistency, and for a consistency analysis with applicable City General Plan goals, policies, and actions as related to GHG emissions

Transportation Element

> ***Goal TR-3:*** *Take proactive steps to reduce Greenhouse Gas Emissions caused by Vehicle Miles Travelled 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.*

Yolo Solano Air Quality Management District

The YSAQMD does not provide any specific guidance for assessing the impacts of GHGs from land use projects located within its boundary.

Association of Bay Area Governments and Metropolitan Transportation Commission

As required by the Sustainable Communities and Climate Protection Act of 2008 (SB 375), ABAG and the MTC developed a Regional Transportation Plan / Sustainable Community Strategy as a component of Plan Bay Area 2040 (MTC and ABAG 2017). In October 2021, the *Plan Bay Area 2050* and Final Environmental Impact Report were adopted (MTC and ABAG 2021). *Plan Bay Area 2050* focuses on climate change and strategies for resilience against hazards such as sea-level rise and wildfires. *Plan Bay Area 2050* includes an implementation plan detailing specific actions to be taken in the next 5 years. *Plan Bay Area 2050* provides a blueprint for how the Bay Area can accommodate future growth while achieving regional GHG emissions reduction targets established by the CARB pursuant to SB 375. As of June 2024, Plan Bay Area 2050+, which is a limited and focused update to Plan Bay Area 2050, is being developed.

4.8.6.4 Local Regulations and Plans

Solano County has adopted a CAP to reduce GHG emissions. 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.

4.8.7 Agencies and Agency Contacts[10]

Table 4.8-5. Agency Contacts for Greenhouse Gas Emissions

Agency	Contact	Permit/Issue
California Air Resources Board (CARB)	1001 I Street Sacramento, CA 95814 helpline@arb.ca.gov (800) 242-4450	Portable Equipment Registration Program
Yolo Solano Air Quality Management District (YSAQMD)	1947 Galileo Ct., Suite 103 Davis, CA 95618 (530) 757-3650	Determination of Compliance

4.8.8 Required Permits and Permitting Schedule[11]

No permits are required related to GHG emissions.

4.8.9 References

CAPCOA (California Air Pollution Control Officers Association). 2008. CEQA & Climate - Change Evaluating and Addressing Greenhouse Gas Emissions from Projects Subject to the California Environmental Quality Act, January 2008. Available online at: https://www.counties.org/sites/main/files/file-attachments/capcoa_white_paper_ceqa_and_climate_change_final.pdf?1344472764

CARB (California Air Resources Board). 2022a. 2022 Scoping Plan for Achieving Carbon Neutrality. November 16, 2022. Available online at: https://ww2.arb.ca.gov/sites/default/files/2022-12/2022-sp.pdf

CARB. 2022b. Unofficial electronic version of the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear. January 1, 2022. Available online at: https://ww2.arb.ca.gov/sites/default/files/2022-05/gie21-final-regulation-unofficial.pdf

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[10] Appendix B (i) (1) (B), Appendix B (i)(2)
[11] Appendix B (i) (3)

MTC and ABAG. 2021. Plan Bay Area 2050, A Vision for the Future. Available online at: https://www.planbayarea.org/finalplan2050.

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Solano County. 2011. Climate Action Plan. Available online at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=10080

4.9 Hazards and Hazardous Materials

This section describes the potential effects on human health and the environment from the storage, use, and handling of hazardous materials in conjunction with construction and operation of the Corby Battery Energy Storage System Project (Project).

As worker health and safety is not a required topic pursuant to the California Environmental Quality Act (CEQA), but is required by the California Energy Commission (CEC) as part of the Opt-in Application, this section also describes systems and procedures that will be implemented to provide occupational safety and health protection for the Project workers in accordance with applicable laws, ordinances, regulations, and standards (LORS). Employers in California are required to provide and maintain a safe and healthful workplace. California's Occupational Health and Safety Act of 1973 established the California Occupational Safety and Health Administration (Cal-OSHA) as the state agency responsible for oversight of workplace safety. Applicable safety elements of Title 8 California Code of Regulations (CCR), General Industry Safety Orders, Construction Safety Orders, and Electrical Safety Orders are addressed in this section.

4.9.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?			X	
2.	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?			X	
3.	Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?				X
4.	Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment?				X
5.	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?			X	
6.	Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?			X	
7.	Expose people or structures, either directly or indirectly, to a significant risk of loss, injury or death involving wildland fires?			X	

4.9.2 Affected Environment[1]

This section discusses the condition of the Project site concerning the potential need to remove or otherwise treat contaminated soil or groundwater at the site, and describes the potential hazards associated with the Project's transport, use, and disposal of hazardous materials. This section also discusses hazards associated with the Project site's location, including hazards related to nearby airports and schools, and the potential impacts associated with wildland fires in the Project area. Anticipated worker health and safety hazards to be encountered during construction and operation of the Project are also discussed in this section.

A Phase I Environmental Site Assessment (ESA) was conducted by NextEra Energy Environmental Services (NextEra ES) for the Project parcel, which is summarized below and included as Appendix 4.9-A of this application, using methods prescribed by ASTM International. A discussion of the existing site conditions and report findings is provided in the Phase I ESA report and summarized in Section 4.9.2.1 below.

4.9.2.1 Hazards and Hazardous Materials

The Project will include a 300-megawatt (1,200 megawatt-hour) battery energy storage system (BESS) and associated onsite substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, stormwater retention basins, storage containers, and a supervisory control and data acquisition (SCADA) system. The Project will connect to the Pacific Gas and Electric (PG&E) Vaca-Dixon Substation via a 230-kilovolt gen-tie line, portions of which will be installed overhead and underground. Project components are depicted in Figures 1-3 and 2-1. Fire protection systems[2] are described in Section 2.3.6 of Section 2, *Project Description*.

Local Land Uses and Sensitive Receptors[3]

The Project site is located in an area predominately comprising agricultural and rural residential land uses. Utility-related facilities are also located near the Project site, including existing 500-kilovolt transmission lines located approximately 0.5 mile to the west and the PG&E Vaca-Dixon Substation located approximately 0.65 mile northwest of the Project site. For purposes of evaluating the potential impacts associated with the storage, use, and handling of hazardous materials in conjunction with construction and operation of the Project, we have identified the "sensitive receptors" as those existing land uses or facilities where people gather or reside that include persons more susceptible to the effects of exposure to hazardous materials. Per CEC's Siting Regulations[3], this includes schools, hospitals, daycare facilities, and long-term health care facilities. There are several sensitive receptors over a mile west of the Project site, as shown on Figure 4.9-1. The closest sensitive receptor to the Project site is the Kaiser Permanente Vacaville Hospital, located approximately 1.5 miles west of the Project site in the city of Vacaville. Additional sensitive receptors within the Project vicinity include schools and long-term care facilities as shown on Figure 4.9-1. The Academy of 21st Century Learning, a private school, is the closest school to the Project site, located approximately 1.75 miles to the west. Cooper Elementary School is the closest public school, located approximately 3 miles southwest of the Project site. Sensitive receptors are also discussed in Section 4.3, *Air Quality*.

[1] Appendix B (g) (1)
[2] Appendix B (g) (11) (B)
[3] Appendix B (g) (10) (B)

NextEra Energy Corby Battery Energy Storage Project

Figure 4.9-1 Sensitive Receptors

Solano County, CA



- Sensitive Receptors

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

PG&E Features

- Gen-tie (Overhead; PG&E)

Transportation

- Interstate Highway
- Road

ID	Sensitive Receptor
1	Kaiser Foundation Hospital
2	The Father's Kids Preschool
3	The Academy of 21st Century Learning
4	Five Acres at Leisure Town North
5	Vaca Valley Living
6	Cornerstone Assisted Living

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Site Investigations

Investigations of the Project site have been undertaken to assess whether contamination may be present. Results of the Phase I ESA are summarized below.

Phase I Environmental Site Assessment

NextEra ES conducted a Phase I ESA in July 2024, included as Appendix 4.9-A of this application, in conformance with the scope and limitations of ASTM E1527-21, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. The site evaluated by the Phase I ESA consists of approximately 40 acres of land on one parcel (Assessor's Parcel Number 0141030090) located at the southwest corner of the Kilkenny Road and Byrnes Road intersection in Solano County, California. The site contains no structures and is a crop field that appeared fallow and covered with native grass at the time the Phase I ESA was conducted in July 2024.

Historical aerial photos of the site from 1937 to 2022 were reviewed as part of the Phase I ESA. Based on this review of historical aerial photos, the Project site has been used for agricultural purposes since at least 1937. More specifically, grass crops were observed from 1937 to 1993, orchards were observed from 1997 to 2016, and grass crops were observed again by 2020.

The Phase I ESA did not reveal evidence of recognized environmental conditions (RECs), historical RECs, controlled RECs, or vapor encroachment conditions in connection with the site. In addition, the site was not listed by any agency database as having the potential for hazardous or toxic wastes on-site. During site reconnaissance, pole-mounted electrical transformers were observed along Kilkenny Road and Byrnes Road, near the northeastern boundary of the Project site. However, no indications of releases, ground surface staining, or stressed vegetation was observed in the vicinity of the transformers. Additionally, an irrigation canal was observed abutting the northern boundary of the Project site. There were no indications of sheens on the water surface of the canal.

While not a REC, historic agricultural use of the subject property is considered an environmental concern as residual agrichemical constituents, including organochlorinated compounds and metals, may be present 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. The Phase I ESA determined that supplemental investigation of the Project site does not appear warranted, unless required by the permitting agency (Appendix 4.9-A). However, pre-construction surface and shallow soil sampling for residual agrichemical constituents would occur in accordance with Project Design (PD) measure **HAZ-03** as described in Section 4.9.5 below.

Hazardous Materials Use and Disposal

The Project will use minimal hazardous materials during construction and operation. During construction, the Project will involve the use of hazardous materials, such as fuels, lubricants, other oils, and greases, to fuel and service construction equipment. These hazardous materials required for construction activities will be stored at the temporary construction laydown areas. Construction equipment fuel storage will include approximately 1,300 gallons of diesel fuel stored in temporary stationary tanks with secondary containment. Hazardous waste and electrical waste will be generated

in limited quantities and will be transported to appropriate regulated waste handling facilities for disposal or recycling.

Operation of the Project will use lithium-ion batteries. Batteries will be delivered to the Project site in U.S. Department of Transportation (DOT)-certified vehicles and in compliance with all applicable requirements of the DOT, California Highway Patrol (CHP), and the California Department of Motor Vehicles (DMV). Batteries will be housed in non-walk-in style (NWI) battery enclosures stored on racking with no internal open space available for entry . Each enclosure unit will also have a fire rating in conformance with the local fire authority and Solano County standards.

The Project will include transformers containing mineral insulating oil enclosed within the equipment; no additional mineral oil will be stored onsite. Other hazardous materials used for operations will either be stored offsite at a regional operations and maintenance (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 will be trained to engage in safe work practices and to properly identify and handle any hazardous materials onsite.

Table 4.9-1 contains a list of all materials used or stored on the Project site that are hazardous or acutely hazardous, as defined in Title 22 CCR Section (§) 66261.20 et seq. Table 4.9-2 contains toxicity, reactivity, and flammability levels of the hazardous materials identified in Table 4.9-1.

Table 4.9-1. Use and Storage of Hazardous Materials[4,5]

Chemical	Use	Quantity	Storage Location	State	Type of Storage
Lithium iron phosphate	Battery	3,423,000 kg [28% wt]	Within sealed battery cells	Solid	Continuously onsite
Graphite	Battery	1,991,000 kg [16% wt]	Within sealed battery cells	Solid	Continuously onsite
Copper	Battery	1,369,000 kg [11% wt]	Within sealed battery cells	Solid	Continuously onsite
Dimethyl Carbonate	Battery electrolyte	934,000 kg [8% wt]	Within sealed battery cells	Liquid	Continuously onsite
Ethylene Carbonate	Battery electrolyte	934,000 kg [8% wt]	Within sealed battery cells	Liquid	Continuously onsite
Diethyl Carbonate	Battery electrolyte	934,000 kg [8% wt]	Within sealed battery cells	Liquid	Continuously onsite
Ethyl Methyl Carbonate	Battery electrolyte	934,000 kg [8% wt]	Within sealed battery cells	Liquid	Continuously onsite
Aluminum	Battery	498,000 kg [4% wt]	Within sealed battery cells	Solid	Continuously onsite
Lithium hexafluoro-phosphate solution	Battery electrolyte	311,000 kg [3% wt]	Within sealed battery cells	Liquid	Continuously onsite

[4] Appendix B (g)(10)(A)
[5] Appendix B (g)(10)(C)

Chemical	Use	Quantity	Storage Location	State	Type of Storage
Carboxymethyl-cellulose Sodium	Battery	311,000 kg [3% wt]	Within sealed battery cells	Solid	Continuously onsite
Polyvinylidene Fluoride	Battery	311,000 kb [3% wt]	Within sealed battery cells	Solid	Continuously onsite
Carbon	Battery	124,000 kg [1% wt]	Within sealed battery cells	Solid	Continuously onsite
Mineral oil	Insulating oil	44,907 gallons	Within transformers	Liquid	Continuously onsite
Sulfur hexafluoride	Circuit breakers	227 kg	Within HV breakers	Gas	Continuously onsite
R134a	Refrigerant	5,386 kg	BESS enclosures	Liquid	Continuously onsite
Ethylene glycol	Coolant	10,880 kg	BESS enclosures	Liquid	Continuously onsite

Table 4.9-2. Toxicity, Reactivity, and Flammability of Hazardous Materials Onsite[6]

Hazardous Materials	CAS Number	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Lithium iron phosphate	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 flammable
Graphite	7782-42-5	Solid graphite, black	Minor skin and eye irritant. May cause respiratory irritation in repeated/ prolonged exposure.	Non-reactive	Not flammable
Copper	7440-50-8	Metallic solid	Eye and respiratory irritant in long-term exposure	Low chemical reactivity	Not flammable
Dimethyl Carbonate	616-38-6	Colorless liquid	Skin, eye, and respiratory irritant. Exposure can cause headache, dizziness, nausea and vomiting, weakness and loss of consciousness.	Vapors may form explosive mixture with air	Flammable
Ethylene Carbonate	96-49-1	White to yellow crystals	Causes severe eye irritation and possible eye injury. May cause respiratory and digestive tract irritation. May cause skin irritation.	Oxidizing agents, reducing agents, acids, bases.	Not flammable
Diethyl Carbonate	105-58-8	Colorless liquid	Skin, eye, and respiratory irritant. Exposure can cause headache, dizziness, nausea and vomiting, weakness and loss of consciousness.	Strong oxidizing agents, strong bases, strong acids, reducing agent	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

[6] Appendix B (g)(10)(A)

Hazardous Materials	CAS Number	Physical Description	Health Hazard	Reactive & Incompatibles	Flammability
Lithium hexafluoro-phosphate solution	21324-40-3	Colorless to Yellow and Very Faint Red Liquid	Causes burns; Inhalation may cause corrosive injuries to upper respiratory tract and lungs; Harmful by ingestion; Toxic by skin absorption	Incompatible with strong oxidizing agents, strong acid	Flammable
Carboxymethyl-cellulose Sodium	9004-32-4	Beige powder	Skin, eye, and respiratory irritant.	Strong oxidizing agents	Not flammable
Polyvinylidene Fluoride	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
Mineral oil	8012-95-1	Oily, clear liquid	Minor health hazard	Sodium hypochlorite; oxidizers	Can be combustible, depending on 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
R134a	811-97-2	Colorless liquid	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
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

1/ Per U.S. Department of Transportation regulations, under 49 Code of Federal Regulations 173: “Flammable” liquids have a flash point of not more than 140 degrees Fahrenheit (°F); “Combustible” liquids have a flash point of greater than 140°F.

Risk Management Plan[7]

Based on the types and quantities of hazardous materials identified in Table 4.9-1 above, a Risk Management Plan will not be required pursuant to Health and Safety Code Section 25531 et seq.

4.9.2.2 Worker Health and Safety

Table 4.9-3 provides a hazard analysis that identifies the anticipated hazards to be encountered during construction and operation of the Project.

Table 4.9-3. Construction and Operation Hazard Analysis

Activity	Exposure Potential	Hazard[1/]	Control
Heavy Equipment Use	C, O	Employee injury and property damage from collisions between people and equipment.	Heavy Equipment Safety Program
Forklift Operation	C, O	Same as heavy equipment.	Forklift Operator Certification
Trenching and Excavation	C, O	Employee injury and property damage from the collapse of trenches and excavations.	Trenching and Excavation Safety Program Use of Excavation Permits per Cal-OSHA
Working at Elevated Locations	C, O	Falls from same level and elevated areas.	100% Fall Protection Program Scaffolding Safety Program
Use of Cranes or Derricks	C, O	Property damage from falling loads. Employee injuries from falling loads. Injuries and property damage from contact with cranes or derricks.	Use of crane permits as required per Cal-OSHA Hoisting and Rigging Safety Program Crane Inspections/Certifications Lifting Plans
Working with Flammable and Combustible Liquids	C, O	Fire/explosion.	Flammable and Combustible Liquid Storage and Handling Program Fire Prevention Program Fire Protection Program Housekeeping Policy and Program Hot Work Permit Program
Hot Work (including Cutting and Welding)	C, O	Employee injury and property damage from fire. Exposure to fumes during cutting and welding. Ocular exposure to ultraviolet and infrared radiation during cutting and welding. Compressed gas cylinders. Electric shocks and burns.	Hot Work Permit Program Respiratory Protection Program Industrial Hygiene Monitoring Program PPE Program Housekeeping Policy and Program Compressed Gas Cylinders Safety Electrical Safety Program
Troubleshooting and Maintenance of Plant Systems and General Construction Activities	C, O	Employee injury and property damage from contact with hazardous energy sources (electrical, thermal, mechanical, etc.).	Hazardous Energy Control (Lockout/Tagout) Program PPE Program Hard Hats, Safety Shoes, and Glasses

[7] Appendix B (g)(10)(E)

Activity	Exposure Potential	Hazard[1/]	Control
Working on Electrical Equipment and Systems	C, O	Employee contact with live electricity.	Qualified Electricians/Contractors Electrical Safety Program PPE Program Hazardous Energy Control (Lockout/Tagout) Program
Working with Hazardous Materials and Hazardous Waste	C, O	Employee injury due to ingestion, inhalation, and/or dermal contact.	HAZWOPER Training Hazard Communication Program
Concrete/Forms Work	C	Employee injury due to work at height, slips, trips, and falls.	Wear fall protection when working at height, protect exposed rebar, and maintain good housekeeping
Confined Space Entry	C, O	Employee injury from physical and chemical hazards.	Permit Required Confined Space Entry Program
General Construction Activities and Operations	C, O	Employee injuries from hand and portable power tools. Employee injury and property damage from inadequate walking and work surfaces. Employee overexposure to occupational noise. Employee injury from improper lifting and carrying of materials and equipment. Employee injury and property damage from unsafe driving. Employee overexposure to hazardous gases, vapors, dusts, and fumes.	Hand and Portable Power Tool Safety Program PPE Program Housekeeping Policy and Program Site Inspection Program Hearing Conservation Program PPE Program Safe Lifting Program Provision of Adequate Material Handling Equipment Safe Driving Program Restricted Vehicle Access to Construction Site Designated Vehicle Traffic Routes Hazard Communication Program Respiratory Protection Program PPE Program Industrial Hygiene Exposure Monitoring

1/ The hazard and hazard controls provided are generic to construction and operational activities. As the design and construction of the facility proceeds, these analyses will be updated to reflect current conditions and knowledge.

C – Construction Phase; Cal-OSHA – California Occupational Safety and Health Administration; HAZWOPER – Hazardous Waste Operation Emergency Response; O – Operational Phase; PPE – personal protective equipment

4.9.3 Environmental Analysis[8]

4.9.3.1 Hazard Analysis

This analysis includes a discussion of common hazardous conditions associated with BESS and the design measures used to counteract these hazards.

[8] Appendix B (g) (1)

Potential Hazards and Design Measures

Below are some of the potential hazards associated with BESS according to the National Fire Protection Association (NFPA).

Thermal Runaway

Thermal runaway is a rapid uncontrollable self-heating state. In typical conditions, heat is able to dissipate from the cells, but during thermal runaway, the cell releases more heat than it can safely dissipate. This state can result in off-gassing, extremely high temperatures, smoke, fire, and even explosion resulting in larger battery fires.

Stranded Energy

After the unlikely event of a fire, there may still be remaining energy stored in the cell. This remaining energy can present a shock hazard and continued fire hazard.

Toxic and Flammable Gases

Battery materials have the potential to create toxic and flammable gases in the event of thermal runaway, leading to the creation of an explosive atmosphere inside the container where the batteries are stored.

Mechanical Abuse

Batteries can be physically compromised by being dropped, punctured, or crushed. Any form of force that causes the battery's internal structure to alter can lead to improper operation of the battery and subsequent failures.

Thermal Abuse

If BESS does not have proper heating, cooling, and ventilation of their cells, the function of the battery could be altered and lead to failure.

Electrical Abuse

If the Battery Management System (BMS) does not have appropriate set-points programmed, is not functioning, is overcharging, or is charging too rapidly, rapid discharging of the cells may occur. All these conditions can lead to damage and failure of the batteries.

Environmental Hazards

Depending on the project location, there are many different environmental aspects to consider when keeping the BESS functioning properly. For example, seismic activity, rodent damage to wiring, extreme heat, extreme cold, or floods could impede the BESS from functioning properly. Special consideration should be taken for areas with extreme temperatures; the BMS and thermal management systems should be applied appropriately to reduce the risk of damage.

Hazard Design Protection Measures

Lithium-ion batteries are high-density and rechargeable. Hazard design protection measures will be included as part of the Project to systematically address each of the hazards discussed above. The specific hazards addressed by each measure are summarized in Table 4.9-4 and discussed following.

Table 4.9-4. Battery Energy Storage System Hazards Addressed by Protection Measures

Protection Measure/ Hazards	Safety Standard Compliance	Self-Contained Systems	Seismic Anchoring	Battery Management Systems	SCADA	System Spacing
Thermal Runaway	X	X		X	X	X
Stranded Energy	X	X			X	X
Toxic and Flammable Gases	X	X	X	X	X	X
Mechanical Abuse	X	X	X			X
Thermal Abuse	X	X		X		X
Electrical Abuse	X			X	X	
Environmental Hazards	X	X	X			

Safety Standard Compliance

The Project's fire protection design will comply with California Fire Code Chapter 12 Energy Systems, which adopts the 2021 International Fire Code (IFC) with amendments. The Project will also comply with applicable county and state fire code requirements, standards from Underwriters' Laboratories (UL; safety organization), and the NFPA. Project design will be compliant with NFPA 855 (Standard for the Installation of Stationary Energy Storage Systems), which is the overarching standard governing all Energy Storage System (ESS) installations. A representative fire protection system schematic is provided in Appendix 2-D. All documentation requirements, including plans, specifications, test and evaluation data, an emergency response plan (ERP), a hazard mitigation analysis (HMA), and all manuals, will be developed in accordance with Chapter 4 of NFPA 855. A template of the Applicant's BESS Fire Response procedure is included as Appendix 4.9-B.

Additionally, the installation of the project will be in accordance with NFPA 70E (NEC), seismic protection will be designed to comply with the local building codes, proper signage will be posted, and the installation will be secured with adequate access roads and means of egress, in accordance with Chapter 4.7 of NFPA 855. The proposed BESS will also come pre-fabricated with smoke and fire detection systems, as required by Chapter 4.8 of NFPA 855 and in accordance with NFPA 72. Fire suppression and control is typically not installed and is not required by the standard for outdoor, non-walk-in systems, in accordance with Chapter 4.9 of NFPA 855. Unless exempted elsewhere in the standard, the Project's installations will be in full compliance with NFPA 855 Table 9.5.2, Outdoor Stationary ESS Installations, and Table 9.6.5, Electrochemical ESS Technology-Specific Requirements. Thermal runaway protection will be provided by physical barriers and a UL1973 listed BMS, in accordance with NFPA 855 §9.6.5.5.2. The proposed BESS will also come equipped with an NFPA 68 and/or NFPA 69 compliant deflagration prevention and control system, in accordance with NFPA 855§9.6.5.6.3. NFPA 855 also aligns with the 2021 IFC, as shown in Table 4.9-5 below. The Project's

consistency with each of these practices, laws, and standards is detailed below in Section 4.9.6, *Laws, Ordinances, Regulations, and Standards*.

Table 4.9-5. 2021 IFC and NFPA 855 Code Compliance

Compliance Required	Remote	2021 IFC Code Reference	NFPA 855 Code Reference
All ESS installations	Yes	§1207.4	§4.1 - §4.7
Clearance to exposures	Yes	§1207.8.3	§9.5.2.6.1
Fire suppression systems	Yes[1/]	§1207.5.5	§9.6.2
Maximum allowable quantities	No	§1207.5.2	§9.4.1
Maximum enclosure size	Yes	§1207.5.6	§9.5.2.4
Means of egress separation	Yes	§1207.5.8	§9.5.2.6.1.7
Size and separation	No	§1207.5.1	§9.4.2
Smoke and automatic fire detection	Yes	§1207.5.4	§9.6.1
Vegetation control	Yes	§1207.5.7	§9.5.2.2
Technology Specific Protection – Lithium-Ion Batteries			
Explosion control	Yes	§1207.6.3	§9.6.5.6
Thermal runaway	Yes	§1207.6.5	§9.6.5.5
Other IFC and NFPA 855 Requirements – All Facilities			
Fire apparatus access roads	Yes	§503	§4.7.11
Key boxes	Yes	§506	-
Fire protection water supply	Yes[2/]	§507	§9.6.3

1/ Where approved by the fire code official, fire suppression systems are permitted to be omitted.
Note: Fire suppression systems are not required for non-walk-in ESS.
2/ For remote locations, and where acceptable to the Authority Having Jurisdiction, water supply shall not be required.

The Applicant met with the Dixon Fire Protection District (DFPD) on October 11, 2024 to discuss the planned battery technology, industry testing requirements, and recommended fire response strategy. DFPD expressed concurrence with the Applicant's strategy for passive fire response rather than active fire suppression systems or use of water for suppression because lessons learned from recent BESS fires have shown that water has not effectively contained propagation and can exacerbate a fire event.

Finally, the selected battery technology for the Project will comply with UL 9540A testing. UL 9540A testing is performed by the battery manufacturer/vendor to analyze the ability of the system design to prevent thermal runaway propagation and mitigate fire risk. Some of the measures to mitigate fire risk include Appendix B (g) (1) thermal management system, fire detection system, alarms, deflagration control, and remote monitoring. The latest UL 9540A testing criteria for battery units such as those proposed for the Project specifically forces a thermal runaway event to analyze the ability of the system design to mitigate such an event and prevent propagation. The latest technology in battery storage has established a design such that in the unlikely scenario of a thermal event, the thermal event would be contained to a single battery container and not result in thermal runaway that could affect neighboring units. The fire protection and prevention technology employed in battery storage units based on battery models available on the current market is specifically designed to prevent a thermal event. Subsequently, the technology is put through UL9540A testing to confirm a thermal runaway event that could result in a fire hazard would not occur. Such a thermal event is extremely rare and difficult to incite. In fact, a 2016 study conducted by the Fire Protection Research

Foundation titled "Hazard Assessment of Lithium-Ion Battery Energy Storage Systems," tested an older model of battery in an attempt to intentionally cause a thermal runaway event to determine the potential for thermal runaway, and the attempt failed, demonstrating the fire prevention integrity of such units to prevent combustion and thermal runaway from occurring (Blum and Long 2016). UL9540A cell and module test reports for the proposed technology are provided in Appendix 4.9-C.

Self-Contained Systems

The BESS enclosures will consist of self-contained electrochemical battery systems using conventional storage technologies with proven safety and performance records. The battery energy storage enclosures are designed to allow periodic maintenance and replacement of underperforming battery components to be easily performed as needed without replacing the entire module.

Seismic Anchoring

The BESS enclosures will be seismically anchored to the building foundation and constructed of non-flammable aluminum and steel. During the plan check process, the Chief Building Official (CBO) will be provided detailed structural engineering drawings of the proposed seismic anchoring, prepared, reviewed and approved by a licensed structural engineer in the state of California to ensure that, in the event of an earthquake, the racks/cabinets will remain upright and will not result in property loss or injury. Potential impacts related to seismic hazards are also discussed in Section 4.7, *Geology, Soils, and Paleontological Resources*.

Battery Management Systems

The Project will also be equipped with a state-of-the-art BMS that monitors multiple set points in the cells with system performance and safety in mind. Some of these set points include cell level voltage, state of health, cell temperature, and cell current in and out to manage charging/discharging rates and voltages. The BMS is capable of electronically isolating and shutting down an affected battery rack that fails to stay within any predetermined limits for any set point that is able to be programmed per the manufacturer's data sheet. This measure ensures that batteries are isolated and contained well before they overheat and enter a thermal runaway state. Any battery disconnected from the system during this process will be fully inspected and tested before being returned to operation. The BMS has been tested and certified for safety, in accordance with UL1973 and UL9540.

Supervisory Control and Data Acquisition

The Project will have a SCADA system that will allow for remote monitoring and control of the system. The SCADA system can run diagnostics on equipment, monitor Project output, and provide control, monitoring, alarm, and data storage functions for the Project. Redundant capability will allow for critical plant control system components to continue functioning so that no single component failure will cause a plant outage.

System Spacing

BESS units will also be grouped into smaller segments limited to certain kilowatt hours and spaced appropriately from other segments to prevent horizontal propagation. The Project design BESS

enclosure spacing adheres to the requirements of Chapter 12 of the California Fire Code and NFPA 855, *Standard for the Installation of Stationary Energy Storage Systems.*

Conclusion

During the building permit process, the Applicant will work with the CBO to ensure that the design is compliant with relevant local codes and standards identified above. The Project will be designed and built to the latest safety standards with multiple redundant forms of protection against electrical faults and fire events at every level of the system. The Project will be operated in accordance with industry practices, applicable laws, and applicable safety standards related to energy storage use. With the implementation of the hazard protection measures described above, the Project will not result in adverse human health effects on surrounding land uses due to the common BESS hazards described above. Based on this analysis and the lack of Extremely Hazardous Substances[9] to be used or stored onsite, offsite consequence analysis modeling is not proposed[10].

4.9.3.2 Health and Safety Programs[11]

During the construction and operation of Project, health and safety programs designed to avoid or reduce hazards and comply with applicable regulations will be implemented to protect the safety and health of the workers. Safety programs will be initiated during construction of the Project. Upon completion of construction and implementation of routine operations, the construction safety and health program will transition into an operations-oriented program to reflect the hazards and controls necessary during routine operations. Program outlines for the Injury and Illness Prevention Plan, Fire Protection and Prevention Program, Personal Protective Equipment (PPE) Program, and Emergency Action Plan that will be implemented are provided below, and are included as PD measures **HAZ-04** and **HAZ-05** for construction and operations, respectively. Additionally, the Applicant will develop and implement Site Security Plans for both the construction and operational phases of the Project, which are included as PD measures **HAZ-06** and **HAZ-07** in Section 4.9.5 below.

Injury and Illness Prevention Plan

The Injury and Illness Prevention Plan will address the following topics:

- Personnel with the Responsibility and Authority for Implementing the Plan;
- Safety and Health Policy;
- Work Rules and Safe Work Practices;
- System for Ensuring that Employees Comply with Safe Work Practices;
- Employee Communications;
- Identification and Evaluation of Workplace Hazards;
- Methods and/or Procedures for Correcting Unsafe or Unhealthy Conditions, Work Practices, and Work Procedures in a Timely Manner, based on the Severity of the Hazards;

[9] 40 CFR Part 355, Appendix A
[10] Appendix B (g)(10)(D)
[11] Appendix B (g)(11)(C)

- Specific Safety Procedures (e.g., Fall Protection, Lockout/Tagout, Respiratory Protection); and
- Training and Instruction.

Fire Protection and Prevention Plan

The Fire Protection and Prevention Plan will address the following topics:

- General Requirements;
- Fire Hazard Inventory, including Ignition Sources and Mitigation;
- Housekeeping and Proper Material Storage;
- Employee Alarm/Communication System;
- Portable Fire Extinguishers;
- Fixed Firefighting Equipment;
- Fire Control/Emergency Response;
- Flammable and Combustible Liquid Storage;
- Use of Flammable and Combustible Liquids;
- Dispensing and Disposal of Flammable and Combustible Liquids;
- Training; and
- Personnel to Contact for Information on the Plan Contents.

Personal Protective Equipment Program

The Personal Protective Equipment Program will cover the following:

- Hazard Analysis and Prescription of PPE;
- Personal Protective Devices;
- Head Protection – American National Standards Institute (ANSI)-approved Hard Hats Mandatory;
- Eye and Face Protection – ANSI-approved Safety Eyewear Mandatory;
- Body Protection;
- Hand Protection;
- Foot Protection – ANSI-approved Safety Footwear Mandatory;
- Fall Protection;
- Skin Protection;
- Hearing Protection;
- Sanitation;
- Full Body Harnesses and Life Lines;
- Protection for Electric Shock;
- Medical Services and First Aid/Bloodborne Pathogens;
- Respiratory Protective Equipment;

- Training; and
- Workplace Evaluation.

Emergency Action Plan

The Emergency Action Plan will address the following topics:

- Emergency Escape Procedures and Emergency Escape Route Assignments;
- Procedures to be Followed by Employees Who Remain to Operate Critical Operations before They Evacuate;
- Procedures to Account for All Employees After Emergency Evacuation has been Completed;
- Rescue and Medical Duties for Those Employees Who are to Perform Them;
- Fire and Emergency Reporting Procedures;
- Alarm and Communication System;
- Physical Security Events;
- Cyber Security Events;
- Gas/Oil Pipeline Events;
- Pandemic Events;
- Personnel to Contact for Information on the Plan Contents;
- Spill Prevention/Control and Countermeasure Plan; and
- Training Requirements.

4.9.3.3 Safety Training Programs[12]

To ensure that employees recognize and understand how to protect themselves from hazards, the Applicant will verify that the contract companies selected to perform work during the construction phase have comprehensive training programs for their employees and that those employees have received the training necessary to perform their work safely.

Table 4.9-6 provides an overview of safety training programs that will be required for construction and operations personnel.

Table 4.9-6. Construction and Operation Safety Training Programs

Training Course	Target Employees
Injury and Illness Prevention Plan	All
Fire Protection and Prevention Plan	All
Personal Protective Equipment Program	All
Emergency Action Plan	All
Heavy Equipment Safety Program	Employees working on, near, or with heavy equipment.
Forklift Operator Training	Employees working on, near, or with forklifts. Operators must be certified.

[12] Appendix B (g) (11) (A)

Training Course	Target Employees
Trenching and Excavation Safety Program (Use of Excavation Permits per Cal-OSHA)	Employees involved with the conduct of trenching or excavation.
100% Fall Protection Program	Employees required to use fall protection.
Scaffolding Safety Program	Employees required to erect or use scaffolding.
Hoisting and Rigging Safety Program	Employees responsible for the oversight or conduct of hoisting and rigging.
Crane Safety Program	Employees supervising or performing crane operations.
Flammable and Combustible Liquid Storage and Handling	Employees responsible for the handling and storage of flammable or combustible liquids or gases.
Hot Work Permits	Employees performing hot work.
Hazardous Energy Control (Lockout/Tagout)	Employees performing lockout/tagout.
Electrical Safety	Employees required to work on electrical systems and equipment.
Permit Required Confined Space Entry	Employees required to supervise or perform confined space entry.
Hand and Portable Power Tool Safety	All
Housekeeping Policy and Program	All
Hearing Conservation	All
Safe Lifting Program	All
Safe Driving Program	All
Hazardous Substance Program (Hazard Communication)	All
Respiratory Protection Program	All employees required to wear respiratory protection.
HAZWOPER/First Responder	Employees working around hazardous materials or waste.

Cal-OSHA – California Occupational Safety and Health Administration; HAZWOPER – Hazardous Waste Operation Emergency Response

4.9.3.4 CEQA Impact Analysis

IMPACT 4.9-1: Would the project create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials? (Less than Significant Impact)

Construction

Project construction will last approximately 14 months. Construction activities will include site preparation, grading, BESS mechanical/electrical installation, substation installation, and construction of overhead and underground generation tie (gen-tie) line segments from the Project substation to the PG&E Vaca-Dixon Substation located northwest of the Project site. PG&E will be responsible for siting, design, and construction of the portion of the gen-tie line from the point of change of ownership (POCO) to the point of interconnection (POI) at the PG&E Vaca-Dixon Substation, including the final four structures and the Interstate 80 (I-80) crossing. Additional construction details are provided in Section 2, *Project Description.*

Project construction will not involve the routine transport, use, or disposal of hazardous materials, as defined by the Hazardous Materials Transport Uniform Safety Act. The Project will involve minimal transport, use, and subsequent disposal of hazardous materials during construction. As described in Section 4.9.2.1 above, construction of the Project will 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 will be stored at the temporary construction staging

areas. These materials will 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 will require them to be stored within secured aboveground containers with secondary containment. Further discussion of SWPPP BMP requirements is provided in Section 4.10, *Hydrology/Water Quality.*

Batteries will be delivered to the Project site in DOT-certified vehicles and in compliance with all applicable requirements of the DOT, CHP, and California DMV. Lithium-ion batteries are classified as a Class 9 hazardous material, and therefore must meet DOT Hazardous Material Regulations (49 Code of Federal Regulations [CFR] 171-180). In addition, under UN3536, "Lithium batteries installed in cargo transport units" (United Nations 2019), the batteries must be securely attached to the interior structure of the cargo unit (e.g., Conex-type shipping container), the batteries must pass UN38.3 tests that prevent overcharge and over discharge between batteries, and no additional hazardous cargo is allowed that is not directly related to the transport of the batteries. UN38.3 compliance allows certification for safe transport in air, land, or sea. According to the study "Comparative Risks of Hazardous Materials and Non-Hazardous Materials Truck Shipment Accidents/Incidents" by Battelle (Battelle 2001), the hazardous material accident/incident rate per mile (road miles only) for all Class 9 hazardous materials is 1.09 in 1 million. This statistic includes en route incidents, and includes all Class 9 hazardous materials, of which lithium-ion batteries make up only a portion. This indicates the worst-case probability of an accident occurring during lithium-ion battery transportation to the Project site would be approximately 1 accident per million miles traveled. There will be a one-time transport of batteries to the Project site, then very infrequent transport of batteries for the lifetime of the Project. Thus, the infrequent shipping, containerized shipping, low probability of accident/incident, and multiple regulations that control the shipping of lithium-ion batteries will make impacts associated with routine transport and foreseeable upset or accidents involving the release of hazardous materials less than significant.

Hazardous waste and electrical waste will be generated in limited quantities and will be transported to appropriate, regulated waste-handling facilities for disposal or recycling. Disposal of hazardous and nonhazardous wastes are discussed in Section 4.19, *Utilities and Service Systems*. As discussed therein, there is adequate landfill capacity to support both hazardous and nonhazardous waste disposal generated by the Project during construction, and impacts related to hazardous and nonhazardous waste disposal were determined to be less than significant.

The Project will also have a comprehensive Spill Prevention, Control, and Countermeasure (SPCC) Plan for both construction and operation, in accordance with applicable federal, state, and local regulations. The preparation and implementation of a SPCC Plan, which will describe proper handling, storage, transport, and disposal techniques and methods to be used to avoid spills and minimize impacts in the event of a spill, will further reduce impacts related to the routine transport, use, or disposal of hazardous materials to a less than significant level

With these protections in place, Project construction will have a less than significant impact due to creation of a potential significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials.

Operation

O&M activities associated with a battery energy storage facility are relatively limited when compared to other industrial land uses. No permanent O&M staff will be located at the Project site. The BESS will be unmanned and operational control will be from an offsite control room through a SCADA system. The Project will require up to six workers to support onsite and offsite O&M and administrative support functions. O&M staff will perform routine visual inspections, execute minor repairs, and respond to needs for plant adjustments, as further discussed in Section 2, *Project Description.*

Project O&M may involve the transportation, use, or temporary storage of a variety of hazardous materials, such as batteries, insulation oil for the transformers, grease, lubricants, paints, solvents, and adhesives. Hazardous materials used for operations will 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 will be trained to engage in safe work practices and to properly identify and handle any hazardous materials onsite. Enclosures used to store hazardous materials will also be inspected regularly for any signs of failure or leakage.

The Project will generate a small amount of waste during operation, such as broken or rusted metal, defective or malfunctioning equipment, electrical materials, empty containers, other miscellaneous solid waste, and typical refuse from the operations and maintenance staff. Appropriate spill containment and cleanup kits will be maintained during operation of the Project. Any hazardous materials that will be stored onsite will be contained in designated areas in accordance with an HMBP. Adherence to the HMBP as required by the California Hazardous Materials Release Response Plans and Inventory law (Health and Safety Code §25500 et seq.) will ensure that all handling, storage, and disposal of hazardous materials will be conducted in accordance with proven practices to minimize exposure to workers or the public. The site will also be fenced to prevent public access to hazardous materials.

Lithium-ion batteries will be used for the proposed BESS and will be contained within steel or aluminum enclosures. Each unit will also be equipped with thermal management systems for thermal management of the batteries and have a fire rating in conformance with the local fire authority and Solano County standards. Impacts related to battery fires are further discussed under Impact 4.9-7 below and in Section 4.20, *Wildfire*. As discussed therein, the Project will result in less than significant impacts related to fires.

During Project operation, the facility will require battery augmentation to maintain Project capacity; batteries will be added but not replaced during this planned activity. However, lithium-ion battery cells may occasionally be replaced due to defects or loss of efficiencies. Similar to Project construction, lithium-ion battery transport during Project operation for augmentation or replacement needs will also be delivered to the Project site in DOT-certified vehicles and in compliance with all

applicable requirements of the DOT, CHP, and California DMV. Disposal of lithium-ion batteries is discussed in Section 4.19, *Utilities and Service Systems*. As discussed therein, hazardous materials disposed of during operation, including any battery cells that require replacement, will be recycled or disposed of in accordance with the applicable hazardous waste requirements and impacts will be less than significant.

Most lithium-ion batteries on the market are likely to meet the definition of hazardous waste by the U.S. Environmental Protection Agency (USEPA) under the Resource Conservation and Recovery Act. Most lithium-ion batteries when discarded would likely be considered ignitable and reactive hazardous wastes. Lithium-ion batteries with different chemical compositions can appear nearly identical yet have different properties. In addition, some discarded lithium-ion batteries are more likely to have hazardous properties if they contain a significant charge, yet such batteries can appear to the user to be completely discharged. Therefore, the USEPA recommends that businesses consider managing lithium-ion batteries under the federal "universal waste" regulations in 40 CFR Part 273. Universal waste regulations do not require shipment using a hazardous waste manifest but do require that the waste be sent to a permitted hazardous waste disposal facility or a recycler (USEPA 2024a). The USEPA acknowledges that lithium-ion batteries are generally safe when used, stored, and charged appropriately. However, in response to a 2021 USEPA report on fires caused by lithium-ion batteries in the waste management process, the USEPA is currently working on establishing a category of universal waste specifically for lithium batteries to improve safety standards and reduce fires from mismanaged end-of-life lithium batteries (USEPA 2024b). Ultimately, there are many options to properly manage the disposal of used lithium-ion batteries, including reclamation by battery manufacturers, and batteries will not be disposed of in municipal landfills. Refer to Section 4.19, *Utilities and Service Systems,* for additional information on battery disposal.

Transformers will contain dielectric insulating fluid in the form of vegetable or mineral oil and will be not routinely be handled by O&M staff. Dust palliatives and herbicides may be transported to the Project site if they are used during operations to control vegetation. These materials will be stored in appropriate containers to prevent accidental release. Equipment containing hazardous materials will be equipped with spill containment areas and spill response supplies. The Project will have a comprehensive SPCC Plan for both construction and operation, in accordance with all applicable federal, state, and local regulations. Therefore, the preparation and implementation of an SPCC Plan, which will describe proper handling, storage, transport, and disposal techniques and methods to be used to avoid spills and minimize impacts in the event of a spill, will further reduce impacts related to the routine transport, use, or disposal of hazardous materials to a less than significant level. Also refer to Section 4.9.3.1, *Hazard Analysis*, above for additional detail. Refer also to Section 2.6 of Section 2, *Project Description*, for a discussion of how facility closure will be accomplished in the event of premature or unexpected cessation of operations.[13]

[13] Appendix B (e)(1)

IMPACT 4.9-2: 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? (Less than Significant Impact)[14]

Construction

Potential impacts that may result from upset or accidents during construction of the Project include the accidental release of materials, such as hydraulic fluid, fuel, insulation oil, grease, lubricants, paints, solvents, and adhesives. Generally, the quantities of these hazardous materials will be relatively limited and handled in accordance with manufacturer's guidelines. In addition, implementation of the BMPs required by the National Pollutant Discharge Elimination System Construction General Permit will include containment and spill response measures, which will reduce the potential impact from upset and accident conditions to a less than significant level.

Additionally, there are no leaking underground storage tanks (LUSTs) or Cleanup Program sites documented on the Project site or in the vicinity and therefore encountering aboveground and/or subsurface contamination is not anticipated during construction (Appendix 4.9-A). The closest listed site, 5057 & 5065 Quinn Road, is located approximately 1.2 miles to the west of the Project site, across I-80. This site was listed as a LUST Cleanup Site in the State Water Resources Control Board GeoTracker Database (SWRCB 2024). According to information reviewed on GeoTracker, a leak from an underground storage tank containing diesel and waste oil (motor/hydraulic/lubricating) was reported on December 7, 2005. An aquifer used for drinking water supply was contaminated. Regulatory oversight was conducted by the Solano County Department of Resource Management and the Central Valley Regional Water Quality Control Board. Cleanup activities were performed, and the case was closed on April 23, 2008. Based on the location and the regulatory status of the site, it does not appear that this site has impacted the environmental condition of the Project site. Therefore, risk of upset and accident conditions will be unlikely, and the impacts will be less than significant.

Operation

O&M of the BESS will use minimal hazardous materials and generate little hazardous waste, as discussed above under Impact 4.9-1. Electrical equipment used by the Project, such as each enclosed transformer, will include an insulating fluid, such as vegetable or mineral oil, but upsets or accidents will be controlled via the secondary containment provided in accordance with applicable federal, state, and local laws and regulations. The insulating oil contained in each transformer does not normally require replacement, minimizing the potential for upsets or accidents involving its use. Further, Health and Safety Code Section 25500 et seq. requires the preparation of hazardous materials release response plans, such as an HMBP, under specified circumstances.

The Project will use lithium-ion batteries, which contain flammable and corrosive liquid materials. The potential for hazardous materials to be released during an accidental breakage of the batteries does exist. However, batteries will be housed in multiple self-contained, prefabricated, storage system enclosure units. All batteries will be contained within specifications that follow applicable federal state and local requirements, including the inclusion of appropriate ventilation, acid resistant

[14] Appendix B (g)(10)(F)

materials, and presence of spill protection supplies. Enclosures used to store hazardous materials will also be inspected regularly for any signs of failure or leakage.

Adherence to regulations and Applicant-proposed protocols during the storage, transportation, and usage of any hazardous materials will minimize and avoid the potential for significant upset and accident condition impacts. Impacts will be less than significant during Project operation. Also refer to Section 4.9.3.1, *Hazard Analysis*, above for additional detail.

IMPACT 4.9-3: 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? (No Impact)

The nearest school, the Academy of 21st Century Learning (a private school), is the closest school to the Project site, located approximately 1.75 miles to the west. Cooper Elementary School is the closest public school to the Project site, located approximately 3 miles southwest of the Project site. The Project is not located within 0.25 mile of an existing or proposed school; as such, there will be no impact.

IMPACT 4.9-4: Would the project be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code § 65962.5 and, as a result, would it create a significant hazard to the public or the environment? (No Impact)

The Project is not located on a site included on a list of hazardous materials sites pursuant to Government Code Section 65962.5. An examination of the California Department of Toxic Substances Control (DTSC) Hazardous Waste and Substances Site List compiled pursuant to Government Code Section 65962.5 (Cortese List) shows that the Project site is not located on a Cortese-listed site. Section 3.4 of the Phase I ESA (Appendix 4.9-A) summarizes the environmental databases that were searched as required by ASTM E1527-21. Section 3.5 of the Phase I ESA also summarizes additional environmental databases reviewed to identify facilities of environmental concern.

As discussed under Impact 4.9-2 above, the closest site listing, 5057 & 5065 Quinn Road, is located approximately 1.2 miles to the west of the Project site, across I-80. The case was closed on April 23, 2008. Based on the location and the regulatory status of the site, it does not appear that this site has impacted the environmental condition of the Project site.

Ultimately, the Project site is not located on a site that is included on a list of hazardous materials sites complied pursuant to Government Code Section 65962.5. As a result, there will be no impact.

IMPACT 4.9-5: 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? (Less than Significant Impact)

The closest airport to the Project site is the Nut Tree Airport, located 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 (Solano County 1988). However, the Project site is located approximately 7.25 miles north of Travis Air Force Base and is within the AIA of the Travis Air Force Base Land Use Compatibility Plan (Travis AFB LUCP; Solano County 2024). Specifically, the Project site is located

within Zone D of the Travis AFB LUCP. According to Table 1 of the Travis AFB LUCP, the only prohibited uses are Hazards to Flight, which includes physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Limitations on the height of structures and notice of aircraft overflights are the only compatibility factors within this zone. Airport Land Use Commission (ALUC) review is only required for objects in Zone D if they are greater than 200 feet above ground level. There are no particular safety requirements for Zone D (Solano County 2024). The Project will not include any structures taller than 200 feet and therefore does not require ALUC review. Since the project will not produce glare, will not attract birds, and will not otherwise interfere with the safety of aircraft operation it will not conflict with the Travis AFB LUCP. The Applicant has also submitted an Informal Review Request to the Department of Defense Siting Clearinghouse to ensure that the Project would not interfere with operations at Travis AFB (Appendix 4.11-C). As such, the Project will not interfere with airport operations or result in a safety hazard for people residing or working in the area. Impacts will be less than significant.

IMPACT 4.9-6: Would the project impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan? (Less than Significant Impact)

The Project will not impair implementation of or physically interfere with the Solano County Emergency Operations Plan (County EOP), the Solano County Multi-Jurisdictional Hazard Mitigation Plan (MJHMP), the Solano County Community Wildfire Protection Plan (CWPP), or the City of Vacaville Emergency Operations Plan (City EOP). The Project site is located in a semi-rural area and will require relatively low staffing for Project O&M, including no permanent onsite O&M staff. The Project will not alter or impair any of the existing road networks. The Project will 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, which is explained in greater detail in Section 4.17, *Transportation*. However, Kilkenny Road is not identified as an evacuation route by the County's General Plan. Furthermore, the Project will secure the necessary encroachment permits to allow for this temporary road closure and will coordinate with the County to ensure that this temporary road closure will not impair emergency response or evacuation in the area. Temporary closure of this roadway will still allow for local access and will 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 will be operable similar to existing conditions. Accordingly, the Project will not physically interfere with any public roadways or introduce substantial volumes of new traffic in a manner that will physically disrupt emergency response and evacuation capabilities. Overall, development of the Project will not impair the County's ability to implement the County EOP, the MJHMP, and the CWPP, nor will the Project impair the City's ability to implement the City EOP. As a result, the Project will not impair implementation of or physically interfere with any adopted emergency response plan or emergency evacuation plan, and impacts will be less than significant.

IMPACT 4.9-7: 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 Impact)

The Project site and gen-tie corridor are not located in or near any State Responsibility Areas (SRAs) or lands classified as Very High Fire Hazard Severity Zones as designated by the California Department of Forestry and Fire Prevention (CAL FIRE). The closest SRA Very High Fire Hazard Severity Zone is

located approximately 7 miles to the west of the Project site (CAL FIRE 2024; Figure 4.20-1). The Project site and gen-tie corridor are within the Local Responsibility Area (LRA) and are designated as LRA Unzoned. Given the designation of LRA Unzoned, the Project is outside of areas identified by CAL FIRE as having substantial or very high risk. As the Project site is located within the LRA, the primary fire protection services in the vicinity of the Project site are provided by the DFPD. CAL FIRE is responsible for providing wildland fire protection, fire prevention, and resource management within SRA lands throughout California.

The Project will be designed in compliance with federal, state, and local worker safety and fire protection codes and regulations, which will minimize the potential for the occurrence of fire. Project O&M may introduce potential ignition sources, such as transformers, inverters, electric transmission line (including the gen-tie line), switchyard, maintenance vehicles, gas/electric-powered machinery, and batteries. However, the potential fire and explosion risk is low for these Project components[15]. All battery components for the BESS will be installed on concrete pads and contained within an enclosure to minimize the potential for sparks or ignition. Fire detection measures will be incorporated in the Project design in accordance with NFPA safety standards.

Each enclosure unit will have a fire rating in conformance with the local fire authority and Solano County standards. Additionally, the proposed Project will use designs and equipment that have undergone UL-9540A testing and meet other applicable UL and NFPA standards. Moreover, the Project will comply with applicable fire codes and standards, such as NFPA 855, California Fire Code 1207, and UL9540. Collectively, these standards require use of only batteries that are UL certified and built-in fail safes designed specifically to prevent thermal runaway and the spread of fire.

The Project will only use batteries that are UL certified and that include built-in fail safes designed specifically to prevent thermal runaway and the spread of fire. As required by California and Solano County fire codes, a fire detection system will be installed, which would automatically shut down other batteries if abnormal conditions are detected. Fire safety systems will be consistent with local zoning and fire department requirements.

Although the closest people or structures are residences located just north of the Project site, across Kilkenny Road, the Project is not expected to expose these residences, or any other people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. Impacts will be less than significant.

4.9.3.5 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the POCO to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of I-80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay, as

[15] Appendix B (g)(10)(G)

shown in Figure 1-3 of Section 1.0, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

As a result of PG&E construction of the gen-tie line from the POCO to the Vaca-Dixon Substation and new interconnection facilities, it is anticipated that there will be minimal impacts related to hazards and hazardous materials and worker health and safety. Construction impacts will be similar to those of the battery energy storage facility and Applicant portion of the gen-tie line and will be regulated by state requirements and BMPs contained in the SWPPP, as previously discussed. Operation impacts will also be similar to those of the battery energy storage facility and applicant portion of the gen-tie line, which will be less than significant. The PG&E Vaca-Dixon Substation and PG&E portion of the gen-tie line are similarly not within 0.25 mile of a school but are within the Travis AFB LUCP. However, the PG&E portion of the gen-tie line will not include structures over 200 feet in height and therefore will not require review by the ALUC or conflict with the Travis AFB LUCP. Therefore, construction of the PG&E portion of the gen-tie line will not result in significant impacts to schools or airports. Construction of the PG&E portion of the gen-tie line from the POCO to the Vaca-Dixon Substation will be under the jurisdiction of the City of Vacaville and will not conflict with the City EOP. Similarly, the PG&E portion of the gen-tie line will not conflict with the County CWPP or the County MJHMP. PG&E will coordinate with the California Department of Transportation and Solano County through their standard processes to secure encroachment approvals for the I-80 crossing. Construction the PG&E gen-tie line will also be designed in compliance with federal, state, and local worker health and safety and fire protection codes and regulations and is not anticipated to expose people or structures, either directly or indirectly, to a significant risk of loss, injury, or death involving wildland fires. Therefore, construction of the PG&E portion of the gen-tie line from the POCO to the Vaca-Dixon Substation and associated interconnection facilities will have no significant impacts with regard to CEQA Significance Criteria for Hazards and Hazardous Materials (Impacts 4.9-1 through 4.9-7 above). No mitigation measures will be required.

4.9.4 Cumulative Effects[16]

Construction and operation of the Project, in combination with the incremental impacts of other projects, will not cause or contribute to any significant cumulative impacts relating to hazards and hazardous materials. As discussed above, the Project will result in less than significant impacts related to the potential to encounter hazardous materials, accidents, or upset conditions during the routine use of hazardous materials or release hazardous materials into the environment that could cause harmful exposures.

Releases of hazardous materials or wastes are site specific, and BESS projects generally do not cumulatively contribute to the impacts of other projects because of the relatively low quantities used and stored at these facilities, the relatively low staffing and minimal O&M activities required during operation, and the nature and characteristics of the emissions. An accident involving a hazardous material release during project construction or operation is location specific and limited in geographic

[16] Appendix B (g) (1)

scope. Therefore, the Project will not cause or contribute to any significant cumulative impacts from accidental releases or discovery of hazardous materials and/or wastes.

Hazardous materials to be used during construction and operation activities are of low toxicity and will consist of fuels, oils, and lubricants. Because these materials are required for operation of construction vehicles and equipment, BMPs will be implemented to reduce the potential for or exposure to accidental spills or fires involving the use of hazardous materials similar to what would be required of other cumulative projects. Impacts from minor spills or drips will be avoided by thoroughly cleaning up minor spills as soon as they occur in accordance with construction requirements to which all cumulative projects adhere. While foreseeable projects have the potential to cause similar impacts, these projects will be required to comply with applicable regulatory requirements and it is assumed these projects would also implement similar BMPs.

In addition, conformance with existing state and county regulations and implementation of appropriate safety measures during construction of the Project, as well as other cumulative projects, will further reduce the impact to a level that would not cause or contribute to any significant cumulative effects.

The release of hazardous emissions within 0.25 mile of a school could be cumulatively considerable if cumulative projects also release hazardous emissions within the same radius of the same school. However, the Project site is not located within 0.25 mile of a school, and thus no cumulative impact will occur.

Similarly, impacts with regard to safety hazards and excessive noise within an airport land use planning area could be compounded by cumulative projects. While the Project site is located within the Travis AFB AIA, the Project site is located within Zone D, which is not a noise hazard zone and does not contain any particular safety requirements. Thus, no cumulative impact will occur.

Impairing implementation of or physically interfering with an adopted emergency plan could be cumulatively considerable if cumulative projects were to impact the same plan or physical alter similar areas, such as the same road network. The Project would require a temporary road closure along Kilkenny Road during construction of the underground portion of the gen-tie line, under either Underground Route Option #1 or Underground Route Option #2. However, as discussed under Impact 4.9-6 above, temporary closure of Kilkenny Road would not impair emergency response or evacuation in the area. No cumulative projects are located within the direct vicinity of the Project site that would be impacted by the temporary closure of Kilkenny Road; thus, no cumulative impacts will occur.

Cumulative impacts with regard to the exposure of people or structures to significant risk of loss, injury, or death involving wildland fires could be compounded, resulting in a cumulative impact if the same people or structures would be affected by the Project and cumulative projects in a manner that would further increase the risk of wildfires beyond that of the Project alone. While construction and operation of the Project will introduce ignition sources on the Project site, the Project will be designed in compliance with federal, state, and local worker safety and fire protection codes and regulations, which will minimize the potential for the occurrence of fire. As noted in Section 4.11, *Land Use and Planning,* the closest cumulative project to the proposed Project is the Weber Road Construction Yard

project, a temporary construction and materials storage yard approximately 0.5 mile north of the Project. Accordingly, the Project, in conjunction with the Weber Road Construction Yard project, will cumulatively increase the risk of exposing people or structures in the area to wildfire risks, beyond that of the Project alone. However, cumulative projects will also be required to comply with federal, state, and local worker safety and fire protection codes and regulations to minimize the potential for the occurrence of fires. Upon compliance with applicable federal, state, and local fire protection regulations, the potential for the Project and cumulative projects to expose people or structures to wildland fires will be reduced to the point where impacts will not be cumulatively considerable.

4.9.5 Mitigation Measures

No mitigation measures for hazards and hazardous materials are proposed because the following Project Design Measures are incorporated into the design of the Project.

PD HAZ-01: An HMBP will be developed and implemented prior to receiving hazardous materials onsite in excess of reportable quantities during construction and operation.

PD HAZ-02: An SPCC Plan will be developed and implemented prior to storing petroleum products onsite in excess of 1,320 gallons during construction and operation.

PD HAZ-03: Prior to construction, the Applicant will perform a limited site investigation to collect and analyze representative surface and shallow soil samples for residual agrichemical constituents, including organochlorinated compounds and metals. If there are contaminants identified in areas of the Project site to be disturbed that exceed both published naturally occurring background levels and applicable screening levels (SLs) published by the California Department of Substances Control (DTSC 2022) for the protection of future commercial/industrial workers, the Applicant shall be required to prepare and submit a Soil Management Plan (SMP). The contaminated portions of the Project site above applicable SLs shall be managed in place or removed and disposed of in accordance with the approved SMP; any contaminated soil above applicable SLs removed from the site shall be disposed of at a licensed non-hazardous or hazardous materials disposal site based on environmental testing of the soil and corresponding disposal requirements.

In addition, all contractors and subcontractors shall develop a Health and Safety Plan (HSP) specific to their scope of work and based upon the known environmental conditions.

Components of the SMP (if required) shall include, but shall not be limited to:

- A detailed discussion of the site background;
- Notification procedures if previously undiscovered significantly impacted soil is encountered during construction;
- Development of cleanup levels as based on DTSC modified screening levels (DTSC 2022);
- Sampling and laboratory analyses of excess soil requiring disposal at an appropriate off- site waste disposal facility;
- Soil stockpiling protocols; and

- Protocols to manage groundwater that may be encountered during trenching and/or subsurface excavation activities.

Components of the HSP shall include, but shall not be limited to, the following elements, as applicable:

- Provisions for personal protection and monitoring exposure to construction workers;
- Procedures to be undertaken in the event that contamination is identified above action levels or previously unknown contamination is discovered;
- Procedures for the safe storage, stockpiling, and disposal of contaminated soils;
- Provisions for the onsite management and/or treatment of contaminated groundwater during extraction or dewatering activities; and
- Emergency procedures and responsible personnel.

PD HAZ-04: Prior to construction, the Applicant will prepare and submit a Project Construction Health and Safety Program containing the following:

  - Construction Injury and Illness Prevention Program;
  - Construction Personal Protective Equipment Program;
  - Construction Emergency Action Plan; and
  - Construction Fire Prevention Plan.

PD HAZ-05: Prior to operations, the Applicant will prepare and submit an Operations and Maintenance Health and Safety Program containing the following:

- Injury and Illness Prevention Program;
- Personal Protective Equipment Program;
- Emergency Action Plan; and
- Fire Prevention Plan.

PD HAZ-06: Prior to commencing construction, a site-specific Construction Site Security Plan for the construction phase shall be prepared and made available to the Compliance Project Manager (CPM) for review and approval. The Construction Site Security Plan shall include the following:

- Perimeter security consisting of fencing enclosing the construction area;
- Security measures 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; and,
- Evacuation procedures.

PD HAZ-07: 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 will be consistent with applicable North American Electric Reliability Corporation security guidelines.

4.9.6 Laws, Ordinances, Regulations, and Standards[17]

4.9.6.1 Hazards and Hazardous Materials

Project design, construction, and operation will be conducted in accordance with all applicable LORS pertinent to hazards and hazardous materials. Table 4.9-7 below summarizes the federal, state, and local (Solano County and City of Vacaville) LORS relating to hazards and hazardous materials.

Table 4.9-7. Laws, Ordinances, Regulations, and Standards for Hazards and Hazardous Materials

LORS	Requirements/Applicability	Administering Agency	Project Conformance
Federal			
Section 302, Emergency Planning and Community Right-to-Know Act (EPCRA) (Pub. L. 99–499, 42 United States Code [U.S.C.] 11022) Hazardous Chemical Reporting: Community Right-To-Know (40 Code of Federal Regulations [CFR] 370)	Requires one-time notification if extremely hazardous substances are stored in excess of threshold planning quantities (TPQs).	Solano County Department of Resource Management, Environmental Health Services Division (DRM EHS)	A Hazardous Materials Business Plan (HMBP) will be prepared for submittal to Solano County DRM.
Section 304, EPCRA (Pub. L. 99–499, 42 U.S.C. 11002) Emergency Planning and Notification (40 CFR 355)	Requires notification when there is a release of hazardous material in excess of its reportable quantity (RQ).	Solano County DRM EHS	An HMBP will be prepared to describe notification and reporting procedures.
Section 311, EPCRA (Pub. L. 99–499, 42 U.S.C. 11021) Hazardous Chemical Reporting: Community Right-To-Know (40 CFR 370)	Requires that material safety data sheets (MSDS) for all hazardous materials or a list of all hazardous materials be submitted to the State or Tribal Emergency Response Commission (SERC), Local or Tribal Emergency Planning Commission (LEPC), and Solano County DRM.	Solano County DRM EHS	The HMBP will include a list of hazardous materials for submission to agencies.
Section 313, EPCRA (Pub. L. 99–499, 42 U.S.C. 11023) Toxic Chemical Release Reporting: Community Right-To-Know (40 CFR 372)	Requires annual reporting of releases of hazardous materials.	Solano County DRM EHS	The HMBP will describe reporting procedures.
Section 112, Clean Air Act (CAA) Amendments (Pub. L. 101–549, 42 U.S.C. 7412) Chemical Accident Prevention Provisions (40 CFR 68)	Requires facilities that store a listed hazardous material at a quantity greater than the threshold quantity (TQ) to develop a Risk Management Plan (RMP).	Solano County DRM EHS	The Project will not store listed hazardous materials; therefore, an RMP will not be required.
Section 311, CWA (Pub. L. 92–500, 33 USC 1251 et seq.)	Requires preparation of an SPCC Plan if the total petroleum storage (including ASTs, oil-filled equipment, and drums) is	SWRCB	An SPCC Plan will be prepared for Construction and Operations.

[17] Appendix B (i) (1) (A)

LORS	Requirements/Applicability	Administering Agency	Project Conformance
Oil Pollution Prevention (40 CFR 112)	greater than 1,320 gallons. The facility will store petroleum products in excess of 1,320 gallons.		
29 U.S.C. § 651, 29 CFR § 1910 et seq. and § 1926 et seq.	Contains requirements for equipment used to store and handle hazardous materials and addresses requirements for equipment necessary to protect workers in emergencies.	U.S. Environmental Protection Agency (Region IX) and Federal Occupational Safety and Health Administration (OSHA)	Project will meet requirements for equipment used to store and handle hazardous materials necessary to protect workers
49 CFR Parts 172, 173, and 179	Provides standards for labels, placards, and markings on hazardous waste shipments by truck (Part 172) and standards for packaging hazardous wastes (Part 173 and 179)	California Highway Patrol, California Department of Motor Vehicles, and U.S. Department of Transportation	Standards for labels, placards, and markings on hazardous waste shipments are the responsibility of the transporters.
State			
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.	California Occupational Safety and Health Administration (Cal-OSHA)	An HMBP will be prepared for submittal to the Solano County DRM EHS.
8 California Code of Regulations (CCR) § 339, § 3200 et seq., 5139 et seq., and 5160 et seq.	Address the control of hazardous substances.	Solano County DRM EHS	The HMBP will include a list of hazardous materials for submission to agencies.
Health and Safety Code, Section 25531 through 25543.4 (CalARP)	Requires registration with local Certified Unified Program Agency (CUPA) or lead agency and preparation of an RMP if regulated substances are handled or stored in excess of TPQs.	Solano County DRM EHS	An RMP will be prepared and submitted to the Solano County DRM EHS.
California Fire Code, Article 89, and others	Includes provisions for storage and handling of hazardous materials, and requirements for combustible and flammable liquids.	Dixon Fire Protection District (DFPD)	Project will meet requirements for the storage and handling of hazardous materials (Article 80), flammable and combustible liquids (Article 79), and for obtaining permits (Article 4).
California Fire Code, Chapter 12	Includes requirements for vehicle impact protection, location, spacing between batteries, egress, security, seismic and structural design, and fire suppression systems. Chapter 12 also sets maximum allowable battery quantities and specific battery type requirements for various battery technologies.	DFPD	Project will meet design and fire suppression requirements for electrical energy storage systems as set forth in Chapter 12 of the California Fire Code.
Senate Bill 38	Adds safety requirements for battery energy storage projects to the California Public Utilities Code. Requires BESS facilities to have an emergency response and emergency action plan, which includes	Solano County DRM EHS and DFPD	Project will develop an emergency response and emergency action plan in accordance with SB 38 requirements.

LORS	Requirements/Applicability	Administering Agency	Project Conformance
	established response procedures for equipment malfunction or failure, procedures that provide for the safety of surrounding residents, neighboring properties, and first responders, and established notification and communication procedures between the BESS facility and local emergency management agencies.		
Local			
Solano County General Plan	Provides guidance for siting and management of facilities that store, collect, treat, dispose, or transfer hazardous waste and hazardous materials.	Solano County DRM and DFPD	The Project will comply with the goals, policies, and implementation measures of the Public Health and Safety Element of the County General Plan, including Policies HS.P-20 and Implementation Measure HS.I-26 as related to fire safety, and Policies HS.P-26 through 31 as related to hazardous materials. Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable County General Plan goals, policies, and implementation measures as related to hazards and hazardous materials.
Solano County Multi-Jurisdictional Hazard Mitigation Plan	Provides guidance for natural and human-caused hazard planning and mitigation.	Solano County DRM	An HMBP will be prepared for submittal to the Solano County DRM EHS, and the Project would not impair the County's ability to implement the MJHMP.
City of Vacaville General Plan	Provides guidance for siting and management of facilities that store, collect, treat, dispose, or transfer hazardous waste and hazardous materials.	City of Vacaville Utilities Administration Department	The Project will comply with the goals, policies, and actions of the Safety Element of the City General Plan, including Policies SAF-P5.2, SAF-P5.4, SAF-P5.7, and Action SAF-5.2 as related to fire safety, and Policy SAF-P6.6 as related to hazardous materials. Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable City General Plan goals, policies, and actions as related to hazards and hazardous materials.
Travis Air Force Base Land Use Compatibility Plan (AFB LUCP)	Regulates land use and safety hazards within the Travis AFB Airport Influence Area	Solano County Airport Land Use Commission	The Project site is located within Zone D of the Travis AFB LUCP and would comply with compatibility factors and development conditions of this zone, including limiting the development of structures to below 200 feet.

LORS – laws, ordinances, regulations, and standard

4.9.6.2 Worker Health and Safety

Project design, construction, and operation will be conducted in accordance with all applicable LORS pertinent to worker safety. Table 4.9-8 below summarizes the federal, state, and local (Solano County and City of Vacaville) LORS relating to worker health and safety.

Table 4.9-8. Laws, Ordinances, Regulations, and Standards for Worker Health and Safety

LORS	Requirements/Applicability	Administering Agency	Project Conformance
Federal			
Title 29 Code of Federal Regulations (CFR) Part 1910	Contains the minimum occupational safety and health standards for general industry in the United States	Occupational Health and Safety Administration (OSHA)	Project will meet federal employee health and safety standards for general industry.
Title 29 CFR Part 1926	Contains the minimum occupational safety and health standards for the construction industry in the United States	OSHA	Project will meet federal employee health and safety standards for the construction industry.
42 United States Code (U.S.C.) § 9601 et seq.; 40 CFR Part 302	Prescribes notification requirements for any release of a reportable quantity of hazardous substance, and notification of potential injured parties in connection with any release	National Response Center and U.S. Environmental Protection Agency, Region IX	Prescribes requirements for notification of any specific release of hazardous substance, notification of potential injured parties, and demonstration of financial responsibility. In the event of a specified release, the Project will follow all specified requirements.
49 CFR Parts 172, 173, and 179	Provides standards for labels, placards, and markings on hazardous waste shipments by truck (Part 172) and standards for packaging hazardous materials (Part 173) and tank cars (Part 179)	California Highway Patrol (CHP)	Project will meet standards for labels, placards, and markings on hazardous waste shipments and standards for packaging hazardous materials.
State			
California Occupational Safety and Health Act, 1970	Establishes minimum safety and health standards for construction and general industry operations in California	California Occupational Health and Safety Administration (Cal-OSHA)	Project will meet safety and health standards for construction and general industry operations.
8 California Code of Regulations (CCR) 339	Requires list of hazardous chemicals relating to the Hazardous Substance Information and Training Act	Cal-OSHA	Project will meet requirements for hazardous chemicals.
8 CCR 1509	Addresses requirements for construction, accident, and prevention plans	Cal-OSHA	Project will meet requirements for construction, accident, and prevention plans.
8 CCR 1509, et seq., and 1684, et seq.	Addresses construction hazards, including head, hand, and foot injuries, and noise and electrical shock	Cal-OSHA	Project will meet standards for construction hazards.
8 CCR 1528, et seq., and 3380, et seq.	Requirements for personal protective equipment (PPE)	Cal-OSHA	Project will meet requirements for PPE.
8 CCR 1597, et seq., and 1590, et seq.	Requirements addressing the hazards associated with traffic accidents and earth moving	Cal-OSHA	Project will meet requirements for hazards associated with traffic accidents and earth moving.
8 CCR 1604, et seq.	Requirements for construction hoist equipment	Cal-OSHA	Project will meet requirements for construction hoist equipment.
8 CCR 1620, et seq., and 1723, et seq.	Addresses miscellaneous hazards	Cal-OSHA	Project will meet standards for miscellaneous hazards.

LORS	Requirements/Applicability	Administering Agency	Project Conformance
8 CCR 1709, et seq.	Requirements for steel reinforcing, concrete pouring, and structural steel erection operations	Cal-OSHA	Project will meet requirements for steel reinforcing, concrete pouring, and structural steel erection operations.
8 CCR 1920, et seq.	Requirements for fire protection systems	Cal-OSHA	Project will meet requirements for fire protection systems.
8 CCR 2300, et seq., and 2320, et seq.	Requirements for addressing low-voltage electrical hazards	Cal-OSHA	Project will meet requirements for low-voltage electrical hazards.
8 CCR 2395, et seq.	Addresses electrical installation requirements	Cal-OSHA	Project will meet requirements for electrical installation.
8 CCR 2700, et seq.	Addresses high-voltage electrical hazards	Cal-OSHA	Project will meet requirements for high-voltage electrical hazards.
8 CCR 3200, et seq., and 5139, et seq.	Requirements for control of hazardous substances	Cal-OSHA	Project will meet requirements for hazardous substances.
8 CCR 3203, et seq.	Requirements for operational accident prevention programs	Cal-OSHA	Project will meet requirements for operational prevention programs.
8 CCR 3270, et seq., and 3209, et seq.	Requirements for evacuation plans and procedures	Cal-OSHA	Project will incorporate evacuation plans as part of the Emergency Action Plan and will meet requirements for evacuation plans and procedures.
8 CCR 3301, et seq.	Requirements for addressing miscellaneous hazards, including hot pipes, hot surfaces, compressed air systems, relief valves, enclosed areas containing flammable or hazardous materials, rotation equipment, pipelines, and vehicle-loading dock operations	Cal-OSHA	Project will meet requirements for miscellaneous hazards.
8 CCR 3360, et seq.	Addresses requirements for sanitary conditions	Cal-OSHA	Project will meet requirements for sanitary conditions.
8 CCR 3511, et seq., and 3555, et seq.	Requirements for addressing hazards associated with stationary engines; compressors; and portable, pneumatic, and electrically powered tools	Cal-OSHA	Project will meet requirements for hazards associated with stationary engines; compressors; and portable, pneumatic, and electrically powered tools.
8 CCR 3649, et seq., and 3700, et seq.	Requirements for addressing hazards associated with field vehicles	Cal-OSHA	Project will meet requirements for hazards associated with field vehicles.
8 CCR 3940, et seq.	Requirements for addressing hazards associated with power transmission, compressed air, and gas equipment	Cal-OSHA	Project will meet requirements for hazards associated with power transmission, compressed air, and gas equipment.
8 CCR 5109, et seq.	Requirements for addressing construction accident and prevention programs	Cal-OSHA	Project will meet requirements for construction accident and prevention programs.
8 CCR 5110, et seq.	Requirements for the implementation of an ergonomics program	Cal-OSHA	Project will meet requirements for ergonomics programs.
8 CCR 5139, et seq.	Requirements for addressing hazards associated with welding, sandblasting, grinding, and spray-coating	Cal-OSHA	Project will meet requirements for welding, sandblasting, grinding, and spray-coating.
8 CCR 5150, et seq.	Requirements for confined space entry	Cal-OSHA	Project will meet requirements for confined space entry.
8 CCR 5155, et seq.	Requirements for use of respirators and for controlling employee exposure to airborne contaminants	Cal-OSHA	Project will meet requirements for use of respirators and exposure to airborne contaminants.
8 CCR 5160, et seq.	Requirements for addressing hot, flammable, poisonous, corrosive, and irritant substances	Cal-OSHA	Project will meet requirements for hot, flammable, poisonous, corrosive, and irritant substances.

LORS	Requirements/Applicability	Administering Agency	Project Conformance
8 CCR 5184, et seq.	Requirements for storage battery systems	Cal-OSHA	Project will meet requirements for storage battery systems.
8 CCR 5185, et seq.	Requirements for changing and charging storage batteries	Cal-OSHA	Project will meet requirements for changing and charging storage batteries.
8 CCR 5192, et seq.	Requirements for conducting emergency response operations	Cal-OSHA	Project will meet requirements for conducting emergency response operations.
8 CCR 5193, et seq.	Requirements for controlling employee exposure to bloodborne pathogens associated with exposure to raw sewage water and body fluids associated with First Aid/CPR duties	Cal-OSHA	Project will meet requirements for controlling employee exposure to bloodborne pathogens associated with exposure to raw sewage water and body fluids associated with First Aid/CPR duties.
8 CCR 5194, et seq.	Requirements for employee exposure to dusts, fumes, mists, vapors, and gases	Cal-OSHA	Project will meet requirements for exposure to dusts, fumes, mists, vapors, and gases.
8 CCR 5405, et seq.; 5426, et seq.; 5465, et seq.; 5500, et seq.; 5521, et seq.; 5545, et seq.; 5554, et seq.; 5565, et seq.; 5583, et seq.; and 5606, et seq.	Requirements for flammable liquids, gases, and vapors	Cal-OSHA	Project will meet requirements for flammable liquids, gases, and vapors.
8 CCR 5583, et seq.	Requirements for design, construction, and installation of venting, diking, valving, and supports	Cal-OSHA	Project will meet requirements for design, construction, and installation of venting, diking, valving, and supports.
8 CCR 6150, et seq.; 6151, et seq.; 6165, et seq.; 6170, et seq.; and 6175, et seq.	Fire protection requirements	Cal-OSHA	Project will meet fire protection requirements.
Title 24, Part 3, California Electrical Code	The Cal-OSHA electrical safety regulations incorporate the requirements of the Uniform Electrical Code located in Title 24, Part 3	Cal-OSHA	Project will meet requirements for electrical safety regulations.
Health and Safety Code Section 25531, et seq.	Requires that every new or modified facility that handles, treats, stores, or disposes of more than the threshold quantity of any of the listed regulated materials prepare and maintain a Risk Management Plan (RMP).	Cal-OSHA	Project will not handle, treat, store, or dispose of more than the threshold quantity of any of the listed regulated materials.
Health and Safety Code Sections 25500 through 25541	Requires the preparation of a Hazardous Material Business Plan (HMBP) that details emergency response plans for a hazardous materials emergency at the facility	Cal-OSHA	Project will prepare an HMBP that details emergency response plans for hazardous materials emergencies.
Local			
Specific hazardous material handling requirements	Provides response agencies with necessary information to address emergencies	Solano County Department of Resource Management, Environmental Health Services Division (DRM EHS)	Project will provide response agencies with necessary information to address emergencies.
Emergency Response Plan	Allows response agency to integrate Project emergency response activities into any response actions	Solano County DRM EHS	Project will prepare an Emergency Response Plan and provide to response agency.

LORS	Requirements/Applicability	Administering Agency	Project Conformance
Business Plan	Provides response agency with overview of Project purpose and operations	Solano County DRM EHS	Project will provide response agency with a business plan containing an overview of the Project.
RMP (Certified Unified Program Agency [CUPA], administered by the County)	Provides response agency with detailed review of risks and hazards located at the Project and mitigation implemented to control risks or hazards	Solano County DRM EHS	Project will not handle, treat, store, or dispose of more than the threshold quantity of any of the listed regulated materials.
Industrial Codes and Standards			
National Fire Protection Association (NFPA)	Prescribes minimum requirements necessary to establish a reasonable level of fire safety and property protection from the hazards created by fire and explosion.	Dixon Fire Protection District (DFPD)	Project will meet minimum requirements necessary to establish a reasonable level of fire safety and property protection from the hazards created by fire and explosion.
NFPA 1	Fire Prevention Code	DFPD	Project will meet Fire Prevention Code requirements.
NFPA 10	Portable Fire Extinguishers	DFPD	Project will maintain fire extinguishers.
NFPA 30	Flammable and Combustible Liquids Code	DFPD	Project will meet applicable code requirements for flammable and combustible liquids onsite during construction.
NFPA 68	Explosion Venting	DFPD	Project will meet applicable requirements for explosion venting.
NFPA 69	Explosion Preventing	DFPD	Project will meet applicable requirements for explosion prevention.
NFPA 70	National Electric Code	DFPD	Project will meet applicable requirements of the National Electric Code.
NFPA 70B	Electrical Equipment Maintenance	DFPD	Project will meet applicable requirements for electrical equipment maintenance.
NFPA 70E	Electrical Safety Requirements for Employee Workplaces	DFPD	Project will meet applicable electrical safety requirements for employee workplaces.
NFPA 72	National Fire Alarm Code	DFPD	Project will meet applicable requirements of the National Fire Alarm Code.
NFPA 75	Protection of Electronic Computer/Data Processing Equipment	DFPD	Project will meet applicable protection requirements for electronic computer/data processing equipment.
NFPA 78	Lighting Protection Systems	DFPD	Project will meet applicable requirements for lighting protection systems.
NFPA 90A	Installation of Air Conditioning and Ventilating Systems	DFPD	Project will include installation of thermal management systems, and will meet applicable requirements.
NFPA 496	Purged and Pressurized Enclosures for Electrical Equipment	DFPD	Project will meet applicable requirements for purged and pressurized enclosures for electrical equipment.
NFPA 497	Flammable and Combustible Liquids Classification	DFPD	Project will meet applicable requirements for flammable and combustible liquids classification.
NFPA 855	Standard for the Installation of Stationary Energy Storage Systems	DFPD	Project design incorporates fire protection and safety requirements.

4.9.7 Agencies and Agency Contacts[18]

4.9.7.1 Hazards and Hazardous Materials

Several agencies regulate hazardous materials, and they will be involved in regulating the hazardous materials stored and used at the Project site. At the federal level, the USEPA will be involved; at the state level, the California Environmental Protection Agency will be involved. However, local agencies primarily enforce hazardous materials laws. For the Project, the primary local agencies with jurisdiction will be the Solano County Department of Resource Management and the DFPD. Agencies responsible for hazardous materials handling and agency contacts are provided in Table 4.9-9 below.

Table 4.9-9. Agency Contacts for Hazardous Materials Handling[19]

Agency	Contact	Permit/Issue
Solano County Department of Resource Management	Solano County Department of Resource Management 675 Texas Street, Suite 5500 Fairfield, CA 94533 (707) 784-6765 RMHelp@solanocounty.com	Hazardous Materials Business Plan; Spill Prevention, Control, and Countermeasure Plan
Dixon Fire Protection District	Bill Sbozil Fire Marshal 205 Ford Way Dixon, CA 95620 (707) 678-7060 firemarshal@cityofdixon.us	Fire Response

4.9.7.2 Worker Health and Safety

Several agencies are involved to ensure protection of worker health and safety. Agency contacts relative to worker health and safety and fire are shown in Table 4.9-10.

Table 4.9-10. Agency Contacts for Worker Health and Safety[20]

Agency	Contact	Permit/Issue
Solano County Department of Resource Management	Solano County Department of Resource Management 675 Texas Street, Suite 5500 Fairfield, CA 94533 (707) 784-6765 RMHelp@solanocounty.com	Hazardous Waste Land and Water Quality Community Health
Dixon Fire Protection District	Bill Sbozil Fire Marshal 205 Ford Way Dixon, CA 95620 (707) 678-7060 firemarshal@cityofdixon.us	Fire Response

[18] Appendix B (i) (1) (B)
[19] Appendix B (i) (2)
[20] Appendix B (i) (2)

Agency	Contact	Permit/Issue
Vacaville Fire Department	Kris Concepcion Fire Chief 630 Merchant Street Vacaville, CA 95688 (707) 449-5452	Fire Response (under mutual aid agreement)
California Occupational Safety and Health Administration, American Canyon District Office	Kathy Lynn Garner District Manager 3419 Broadway Street, Suite H8 American Canyon, CA 94503 (707) 649-3700 DIRDOSHAmericanCanyon@dir.ca.gov	Worker Health and Safety
Solano County Office of Emergency Services	530 Clay Street Fairfield, CA 94533 (707) 784-1600 oes@solanocounty.com	Emergency Services and Disaster Preparedness Issues

4.9.8 Required Permits and Permitting Schedule

4.9.8.1 Hazards and Hazardous Materials

Permits required and permit schedule for matters related to hazardous materials handling are summarized below in Table 4.9-11.

Table 4.9-11. Permits and Permitting Schedule for Hazardous Materials Handling[21]

Permit	Agency	Schedule
Hazardous Materials Business Plan	Solano County Department of Resource Management	Approximately 60 days before any regulated substance comes on-site

4.9.8.2 Worker Health and Safety

Permits required and permit schedule for matters dealing with worker safety for the Project are provided in Table 4.9-12.

Table 4.9-12. Permits and Permitting Schedule for Worker Health and Safety[22]

Permit	Agency	Schedule
Scaffolding Permit	Solano County	30 days prior to start of construction
Trenching and Excavation Permit	Any California Occupational Safety and Health Administration (Cal-OSHA) district or field office	60 days prior to start of construction
Permit-to-erect Fixed Tower Crane	Any Cal-OSHA district or field office	60 days prior to start of construction
Construction Permit	Solano County	60 days prior to start of construction
Grading Permit	Solano County	60 days prior to start of construction
Encroachment Permits	Solano County	60 days prior to start of construction

[21] Appendix B (i) (3)
[22] Appendix B (i) (3)

4.9.9 References

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USEPA (U.S. Environmental Protection Agency). 2024a. Used Lithium-ion Batteries. Available online at: https://www.epa.gov/recycle/used-lithium-ion-batteries#businesses (accessed July 2024).

USEPA. 2024b. Improving Recycling and Management of Renewable Energy Wastes: Universal Waste Regulations for Solar Panels and Lithium Batteries. Available online at: https://www.epa.gov/hw/improving-recycling-and-management-renewable-energy-wastes-universal-waste-regulations-solar (accessed July 2024).

4.10 Hydrology/Water Quality

This section identifies and evaluates issues related to hydrology and water quality within the context of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines. This discussion simultaneously addresses California Environmental Quality Act (CEQA) checklist items. For this analysis, the affected environment study area is defined as the Project site and the watershed area in which it is located.

This section also provides relevant information on the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

4.10.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or ground water quality?			X	
2.	Substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin?			X	
3.	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 a substantial erosion or siltation on- or off-site; 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 stormwater drainage systems or provide substantial additional sources of polluted runoff; or iv) impede or redirect flood flows?			X	
4.	In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation?				X
5.	Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan?			X	

These five potential impacts from the Project are assessed below in Section 4.10.3, *Environmental Analysis*.

4.10.2 Affected Environment[1] [2]

The Project site lies in the southern end and on the western edge of the Sacramento Valley, which constitutes the northern half of the Great Valley Geomorphic Province (see Figure 4.7-1). The site is also located close to the Coastal Ranges Geomorphic Province. The local topography is very flat with a

[1] Appendix B (g) (1)
[2] Appendix B (g) (14) (B)

gentle slope east and southeast toward the Sacramento-San Joaquin Delta. A site-specific Hydrology and Hydraulics Report was prepared to assess drainage conditions and flooding potential for the Project site under current and proposed conditions (Appendix 4.10-A). Information from this report is used throughout this section.

4.10.2.1 Regional Setting and Climate

The climate in Solano County is Mediterranean with wet winters and hot, dry summers. Climate data from the Vacaville, California, weather station are representative of the local climate. The average maximum temperature varies from a winter low of 56 degrees Fahrenheit (°F) in December and January to a summer high of 96 °F in July. The average minimum temperature ranges from a winter low value of 38 degrees Fahrenheit in December to a high value of 59 °F in August. Rain-producing storms that occur over the Project site generally come from the west, deriving their moisture from the Pacific, before passing over the coast ranges or up through the San Francisco, San Pablo, and Suisun bays. Precipitation averages at locations west of the of the Project (i.e., in the San Francisco Bay area or along the coast) tend to be greater than those to the east. Thus, average annual precipitation in San Rafael (31 inches), Santa Rosa (31 inches), and Sonoma (31 inches) is greater than it is in Fairfield (25 inches), Vacaville (25 inches), or Davis (20 inches), with the Project site located between the latter two locations (WorldClimate 2022).

4.10.2.2 Surface Water Hydrology[3]

The Project site is located within the 8-digit hydrologic unit (HU) identified as the Lower Sacramento (HU Code: 18020163), which is within the larger Sacramento River Basin (HU Code: 1802). However, on a more local scale, the Project site straddles the divide between two 12-digit HUs: the Gibson Canyon Creek-Sweany Creek area (HU Code: 180201630502) and the Upper Ulatis Creek area (HU Code: 180201630503). Because of this location, runoff from the Project site theoretically flows partly into each basin and primarily as overland flow, and not as concentrated channel flow (see Figure 4.10-1 and Figure 4.10-2).[4]

The drainage areas that contain the Project site ultimately empty into the Sacramento-San Joaquin Delta. The Delta is the low point in the Central Valley where the Sacramento River and San Joaquin River converge before surface water flows west into the San Francisco Bay through the Suisun and San Pablo Bays. However, the local topography from the project site to the southeast is very flat and a system of artificial canals are used to move and/or drain water for various types of agricultural uses in the area (see Figure 4.10-2).

[3] Appendix B (g) (14) (B) (ii)
[4] Appendix B (g) (14) (B); Appendix B (g)(14)(B)(ii)

NextEra Energy
Corby Battery Energy Storage System Project

Figure 4.10-1
Regional Water Resources

Solano County, CA



County
HU8 (Subbasin)

Proposed Features

Project Site

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:250,000 **NAD 1983 StatePlane California II FIPS 0402 Feet**

0 1 2 Miles

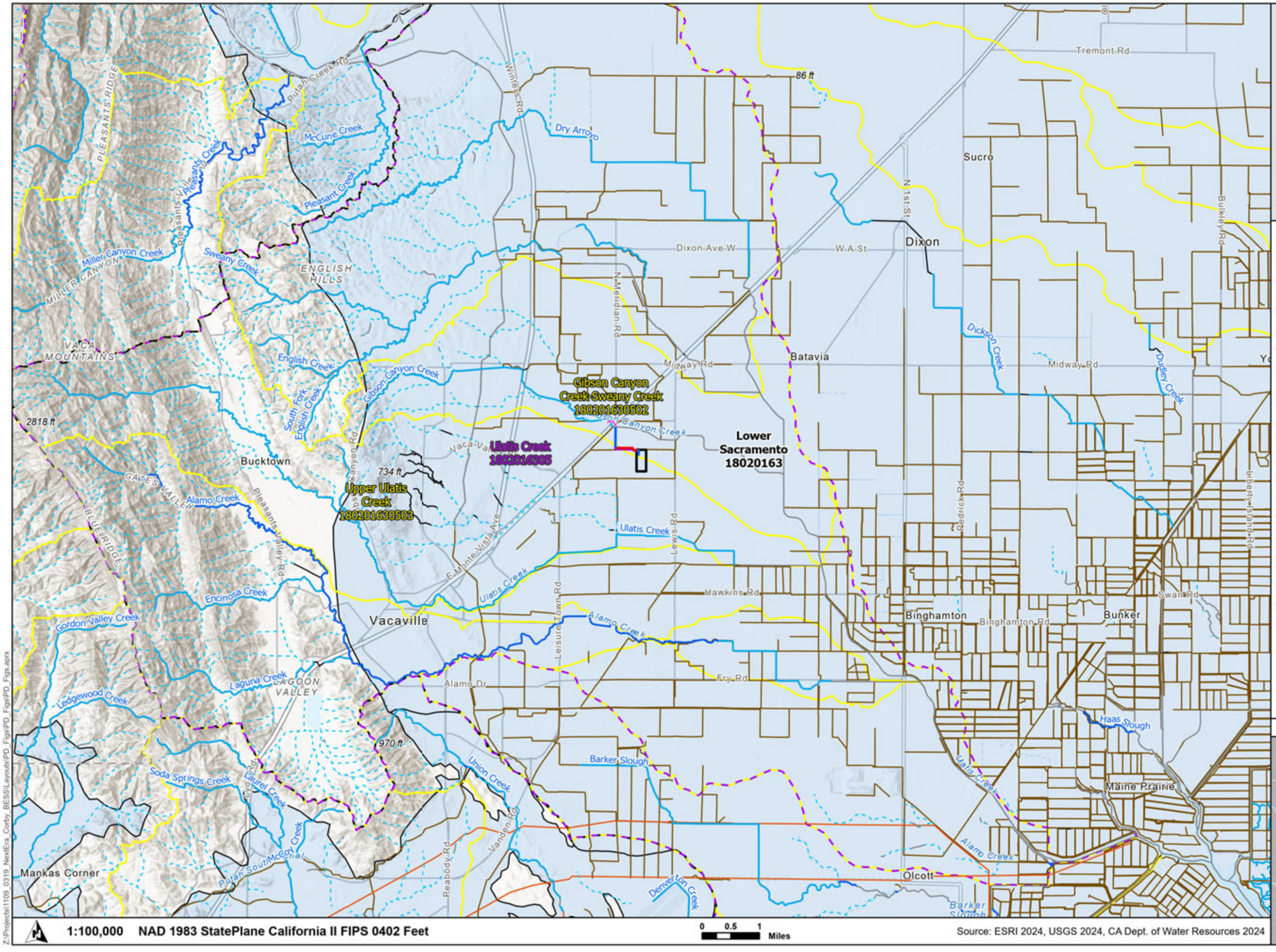
Source: ESRI 2023, USGS 2024, CA Dept. of Water Resources 2024

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NextEra Energy Corby Battery Energy Storage System Project

Figure 4.10-2 Local Water Resources

Solano County, CA



- HU8 (Subbasin)
- HU10 (Watershed)
- HU12 (Subwatershed)

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

National Hydrography Dataset

- Connector
- Canal/Ditch
- Pipeline
- Artificial Path
- Intermittent Watercourse
- Perennial Watercourse
- Ephemeral Watercourse

Groundwater Basin

- Sacramento Valley Groundwater Basin, Solano Subbasin (#5-21.66)

PG&E Features

- Gen-tie (Overhead; PG&E)

7.5 Minutes Topographic Map: Allendale 2015

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:100,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.5 1 Miles

Source: ESRI 2024, USGS 2024, CA Dept. of Water Resources 2024

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The existing drainage from the Project site is roughly divided between the northern half, which drains toward the Gibson Creek-Sweany Creek watershed area, and the southern half, which drains toward the Upper Ulatis Creek watershed area (Figure 4.10-3). However, the current drainage condition is affected by the adjacent agricultural roadway along the western edge of the parcel and Byrnes Road that runs along the eastern boundary of the parcel. The agricultural road is elevated above the general topography, which diverts most potential surface water run-on flows from points west to the south, around the parcel. Most of the runoff from the parcel itself (primarily sheet flow) empties into the drainage ditch on the west side of Byrnes Road, which flows to the south (see Appendix 4.10-A).

Because there is no actual tributary within the main parcel, and it has been used for, and altered by, agricultural activities for many years, there are no jurisdictional waters associated with the Project site. The Aquatic Resource Delineation Report prepared for the Project site (Appendix 4.4-D) reports that there are no jurisdictional waters within the Project site. A total of 4 aquatic resource types and 17 individual aquatic features were mapped within the Project disturbance area and an associated 250-foot buffer. No jurisdictional area will be impacted during Project construction or operations.

4.10.2.3 Groundwater[5]

The source of groundwater beneath the Project site is the Solano Subbasin. The subbasin boundaries are defined by Putah Creek on the north, the Sacramento River on the east (from Sacramento to Walnut Grove), the North Mokelumne River on the southeast (from Walnut Grove to the San Joaquin River), and the San Joaquin River on the south (from the North Mokelumne River to the Sacramento River).

The primary water-bearing formations within the Solano Subbasin are sedimentary continental deposits of Late Tertiary (Pliocene) to Quaternary (Recent) age. Fresh water-bearing units include Quaternary Alluvium and the older Tehama Formation (DWR 2003). The units pinch out near the Coast Range on the west and thicken to nearly 3,000 feet near the eastern margin of the subbasin. Saline water-bearing sedimentary units underlie the Tehama Formation (DWR 2003).

Permeability of the Quaternary Alluvium is highly variable. Wells penetrating sand and gravel lenses of the unit produce between 300 and 1,000 gallons per minute (gpm), while the wells completed in the finer-grained portions of the Quaternary Alluvium produce between 50 and 150 gpm (DWR 2003). Beneath the Project site, the Quaternary Alluvium is estimated to be approximately 100 feet thick (Thomasson et al. 1960) with thin coarse-grained water-bearing layers that rarely produce more than 50 gpm based on well test results reported on DWR well completion reports (Appendix 4.10-B, Attachment A). Underlying the Quaternary Alluvium deposits is the Tehama Formation, which represents a significant groundwater resource in the Solano Subbasin. It consists of moderately compacted silt, clay, and silty fine sand enclosing lenses of sand and gravel, silt and gravel, and cemented conglomerate (DWR 2003). Permeability of the Tehama Formation is variable depending on the depth and location. The Tehama Formation is divided into the Upper Tehama zone, the Middle Tehama zone, and the Basal Tehama zone. The Upper Tehama zone extends to a depth of approximately 700 feet beneath the Project site, and many shallow water wells have been completed in the Upper Tehama and produced up

[5] Appendix B (g) (14) (B) (iv)

to 460 gpm, according to the well pumping information obtained from DWR well completion reports (Appendix 4.10-B, Attachment A).

The anticipated groundwater flow directions in the Solano Subbasin within the Alluvial Aquifer and Upper Tehama Formation tend to be from west/northwest to east/southeast (LSCE Team 2024) generally towards the Sacramento River. In the deeper confined Basal Tehama Formation, there are fewer groundwater level data, but groundwater gradients indicate flow is generally to the southwest towards the City of Vacaville, where most of the groundwater pumping from the Basal Tehama zone is occurring (LSCE Team 2024).

Overall long-term trends in groundwater levels are stable in the Solano Subbasin with some declining levels evident in localized areas, most notably in the northwestern part of the Subbasin (LSCE Team 2021). Groundwater levels exhibit declines during drought periods and recovery during and after wet periods with seasonal fluctuations observed throughout the Subbasin. In the vicinity of the Project site, the groundwater level has historically ranged from 7 to 35 feet below ground surface in wells completed in the Alluvial Aquifer and Upper Tehama Formation, based on well information obtained from the DWR well completion reports (Appendix 4.10-B, Attachment A).

The sustainable yield for the Subbasin is estimated to be 190,000 acre-feet per year (AFY), which is equal to the volume of groundwater extracted annually in the Subbasin, and approximately equal to the annual volume of replenishment occurring within the Subbasin, in addition to other water budget inflows (LSCE Team 2021). Sustainable yield is defined as the rate at which groundwater can be pumped without compromising the quality or quantity of the water, or causing unacceptable environmental or economic consequences. The groundwater monitoring results indicate that groundwater levels are not declining in the Subbasin, and they are not expected to decline in the future. As such, there is no danger of declining groundwater supply in the Subbasin in the foreseeable future, according to the Solano Subbasin Groundwater Sustainability Plan (GSP; LSCE Team 2021). Given that no groundwater supply shortage is anticipated anytime during the next 50 years, and that the 30 AFY Project groundwater supply needs are miniscule in comparison, representing less than 0.02 percent of the annual average groundwater extraction from the Subbasin, the potential impact on groundwater aquifers is negligeable (see Appendix 4.10-B).

NextEra Energy
Corby Battery Energy Storage System Project

Figure 4.10-3
Current Drainage Conditions

Solano County, CA

- EG Drain Path
- EG Drainage Area
- HU12 (Subwatershed)

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

National Hydrography Dataset

- Connector
- Canal/Ditch
- Artificial Path
- Intermittent Watercourse
- Ephemeral Watercourse

PG&E Features

- Gen-tie (Overhead; PG&E)

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



Gibson Canyon Creek-Sweany Creek 180201630502

Gibson Canyon Creek-Sweany Creek 180201630502

Upper Ulatis Creek 180201630503

Gibson Canyon Creek

Sweany Creek

Ulatis Creek

Ulatis

Leisure Town

Hartley

Vaca Dixon Substation

Airport abandoned

Vaca Valley Raceway

Reservoir

Windmill

Sewage Disposal

Trailer Park

Golf Course

Substation

PACIFIC

SOUTHERN

UNDER CONSTRUCTION

BOUNDARY

DIABLO MERIDIAN

MT

GRANT

1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.5 1 Miles

Source: ESRI 2024, USGS 2024, CA Dept. of Water Resources 2024

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4.10.2.4 Flooding[6]

The Federal Emergency Management Agency (FEMA) is responsible for mapping areas subject to flooding during rare events such as a 100-year return period flood (i.e., an event with a 1 percent chance of occurring in a given year). The Flood Insurance Rate Map produced by FEMA for Solano County shows that the Project site does not lie within a 100-year flood zone or any other special flood hazard zone. It is located within Zone X, an area determined to be "outside the 0.2 percent annual chance flood" (FEMA 2009). The nearest 100-year floodplains (special flood hazard areas) to the Project site are Gibson Canyon Creek (about 1,000 feet to the northeast) and Horse Creek (about 3,000 feet to the southwest). The Solano County General Plan indicates the Project site area is not even in a 200-year return period flood zone (Solano County 2008, Chapter 5).

Because the Project site will act as a separate, isolated drainage area once construction is completed, and will flow to the drainage ditch on the west side of Byrnes Road, all runoff will ultimately go to the Upper Ulatis Creek watershed (see Appendix 4.10-A). However, runoff from within the developed portions of the Project site will drain to the two on-site stormwater detention basins, which will keep stormwater flow rates leaving the site at pre-construction levels. This includes flows from storms up to, and including, the 100-year return period, 24-hour storm as required by the County hydrology manual (SCWA 1999) and the Department of Resource Management (Solano County 2006).

4.10.2.5 Dam Inundation Zones

The two watersheds containing the Project site are both small (less than 30 square miles), and there are no dams of any size within either watershed upstream of the Project site. Because the Project site straddles a watershed divide, there is no potential upstream area in which to place a dam. Finally, the Solano County General Plan indicates this area is not in dam inundation zone (Solano County 2008, Chapter 5). As a result, the Project site is not at risk from dam-breach flooding.

4.10.2.6 Water Supply[7]

No water will be required for Project operations. Battery energy storage system (BESS) equipment will not require water supply. The Project will not have an operations and maintenance facility, will be operated remotely, and will not have permanent sanitary facilities. Temporary sanitary facilities will be procured when required to support on-site maintenance activities.

Limited water will be required for construction; up to 30 acre-feet (AF) will be used during the construction phase for site grading activities, compaction, dust control, and other minor uses. Following construction, temporary irrigation will be required to support establishment of the proposed drought-tolerant perimeter landscaping. Approximately 664,000 gallons (2.0 AF) will be required during the first year following installation. Required irrigation volumes are expected to be scaled back by 20 to 30 percent each year to allow for complete shutoff of irrigation by year 3 through 5.

[6] Appendix B (g) (14) (B) (iii)
[7] Appendix B (g) (14) (C); Appendix B (g) (14) (C) (i); Appendix B (g) (14) (C) (ii); Appendix B (g) (14) (C) (v)

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

- **Solano Irrigation District (SID)** – SID is the local water purveyor for the Project site and surrounding area, and 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. SID provides construction water "for on-site dust control and soil consolidation during construction and/or grading activities on lands within the District's boundary" (SID 2024). The Applicant submitted a request for construction water through the SID's defined process. Based on the response received (see Appendix 2-C), SID is not able to process requests for future years and does not provide will-serve letters. Water budgets are approved on an annual basis and all construction water contracts terminate at the end of each calendar year.
- **On-site groundwater well** – In the event SID is unable to meet Project water supply needs, the Applicant will develop an on-site groundwater well to serve construction and temporary landscape irrigation needs.

A desktop groundwater feasibility study indicates that it is feasible to construct a 60-gpm onsite groundwater supply well to meet the Project's water supply needs (see Appendix 4.10-B).

4.10.3 Environmental Analysis[8]

The significance criteria provided in the CEQA checklist (Section 4.10.1) are evaluated here for potential impacts to water resources. The five areas of potential impact by the Project on water resources are assessed below within the framework of the phases of Project implementation, i.e., the construction phase (Section 4.10.3.1) and the operations phase (Section 4.10.3.2). The impact evaluation is then summarized for each CEQA impact (Section 4.10.3.3).

4.10.3.1 Construction Impacts

Degrade Water Quality[9]

All of the Project site, including those areas that will be disturbed for construction, is relatively flat with little potential for concentrated runoff flows. Construction will use bulldozers, graders, semi-trucks, and various other types of heavy equipment for vegetation removal, grubbing, grading, and installation of roads and other facilities. Such construction activities will result in minor changes to on-site topography, including increased elevations and intentional sloping for drainage purposes. Nevertheless, these activities could potentially loosen existing surface soils and sediments and increase the possibility of erosion occurring during storm events. Water used for dust suppression also has the potential to generate runoff that could transport sediments and dissolved solids. The use of construction equipment on-site may involve the accidental release of fuel, oils, brake dust, lubricants, antifreeze, and other potentially hazardous substances at the Project construction site. These water

[8] Appendix B (g) (1)
[9] Appendix B (g) (14) (A) (i): Appendix B (g) (14) (A) (iii); Appendix B (g) (14) (C); Appendix B (g) (14) (E) (iii)

quality pollutants could be delivered to surface water bodies during storm events, and/or be infiltrated into groundwater and the underlying aquifer, resulting in the degradation of water quality.

As a result, the Project will be subject to compliance with the National Pollutant Discharge Elimination System (NPDES) General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities(Order 2009-0009-DWQ, NPDES No. CAS000002; as amended by Orders 2010-0014-DWQ and 2012-006-DWQ), commonly referred to as the Construction General Permit.[10] The Construction General Permit would include development and implementation of a Stormwater Pollution Prevention Plan (SWPPP). The objectives of a SWPPP are to identify possible pollutant sources that may be delivered offsite (in the form of runoff) and affect the quality of stormwater discharge; to implement site controls and practices to reduce stormwater pollution; and to protect water quality in receiving waters. The SWPPP would include site-specific best management practices (BMP) to minimize erosion on-site and reduce or prevent conditions of erosion and stormwater runoff.

As described in Section 4.9, *Hazards and Hazardous Materials*, diesel and gasoline fuels and other hazardous materials such as oils, solvents, hydraulic fluids, and paints commonly associated with construction equipment will be stored and handled in a manner to prevent accidental release, i.e., consistent with the hazardous materials handling BMPs; Spill Prevention, Control, and Countermeasure Plan (SPCC Plan); and other measures contained within the required SWPPP.

Complying with General Construction Permit implementation requirements, which would include the preparation and deployment of a SWPPP, an SPCC Plan, and associated BMPs, will help reduce the effects on water quality during construction to a temporary and less than significant impact.

Deplete Groundwater[11]

As discussed in Section 4.10.2.6, depending on SID water availability, the Project may use up to 30 AF of groundwater during construction and up to 2 AFY for up to 5 years to temporarily irrigate drought-tolerant landscaping.

The average annual volume of groundwater extraction in the Solano Subbasin is reported to be approximately 180,000 AFY. While this average extraction has been maintained, groundwater storage in the Subbasin has been stable to increasing based on the observed groundwater levels and model-simulated water budget results. Groundwater storage is not expected to decrease in the future and there is no danger of declining groundwater supply in the Subbasin in the foreseeable future (LSCE Team 2021). No groundwater supply shortage in the Solano Subbasin is anticipated anytime during the next 50 years. In addition, the 30 AF potential Project construction groundwater supply needs are miniscule, representing less than 0.02 percent of the annual average groundwater extraction from the Subbasin. Therefore, potential for the Project to deplete groundwater in the subbasin, should groundwater become the primary water supply source for the Project, is negligeable (see Appendix 4.10-B).

[10] Appendix B (g) (14) (A) (i)
[11] Appendix B (g) (14) (C) (iii)

If the water supply source for the Project is not groundwater, there will be no impact to the groundwater resource in the Solano Subbasin. Should the water supply needs of the Project be provided by the groundwater resources of the Solano Subbasin, the water demand will be so small it will represent a less than significant impact in terms of depleting the groundwater resource.

Alter Runoff/Drainage[12]

The Project site currently drains two small areas on either side of a watershed divide with no concentrated flow paths on either side. In addition, it is a very flat area with gentle slopes toward either side (north and south) of the parcel. The proposed drainage condition will be more uniform in slope and direction of runoff but will not deviate substantially from existing conditions. Flow will still split with the northern half of the parcel (approximately) draining to the northern stormwater basin, while the southern half will drain to the southern stormwater basin. Both stormwater basins will discharge to the drainage ditch on the western side of Byrnes Road. Since there is no identifiable drainage course currently on either half, there will be no modification or rerouting of any existing drainage courses. In addition, no part of the Project site falls within a FEMA-identified 100-year flood zone. The nearest such zone is to the northeast, along Gibson Canyon Creek. A second 100-year flood zone is to the southwest, on Horse Creek (see Figure 4.10-4).

There will be up to 65.9 acres of surface disturbance during construction, ending with an increase of up to 14.2 acres of impervious surface across the Project site after construction. The added impervious surfaces include 2.5 acres from the battery cabinets, their foundations, and the foundations for the substation equipment. The remaining 11.7 acres comprise the internal access roadway system and yard surfacing.

The parts of the Project site to be disturbed during construction are relatively flat, with limited potential for surface water runoff to concentrate and create erosive forces. Construction will involve the use of bulldozers, graders, semi-trucks, and various other types of heavy equipment for vegetation removal, grubbing, grading, and installation of roads and other facilities. These construction activities will disturb the ground surface and involve minor, and temporary changes to on-site topography, increasing the potential for erosion during storm events. Water used for dust suppression also has the potential to generate runoff that could transport sediments and dissolved solids. However, no increase in surface runoff potential is expected to be caused by construction activities, and the two stormwater management ponds on the Project site will control off-site discharges to mimic preconstruction levels.

[12] Appendix B (g) (14) (E) (iii), (vi), and (vii)

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.10-4 Proposed Drainage Conditions

Solano County, CA

Gibson Canyon Creek-Sweany Creek 180201630502

- PG Site High Point
- Contour (1-meter)
- PG Drainage Area
- Surface Runoff
- Gibson Canyon Creek Sweany Creek

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Stormwater Pond
- Project Substation
- Drainage Ditch
- BESS Area

PG&E Features

- Gen-tie (Overhead; PG&E)

FEMA Flood Zones

- Zone A: Areas with a 1% annual chance of flooding
- Zone AE: The base floodplain where base flood elevations are provided

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:10,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.2 0.4 Miles

Source: ESRI 2024, USGS 2024, CA Dept. of Water Resources 2024

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Additionally, the Applicant must comply with the requirements of the NPDES Construction General Permit, including the development and implementation of a SWPPP. Among the objectives of a SWPPP are to evaluate and compare the natural surface drainage that currently exists at the site to the proposed drainage system implemented through Project development. Although this is primarily intended to identify sources that may contribute pollutants to offsite runoff (affecting stormwater quality), it also evaluates runoff conditions in the transition period of construction. The SWPPP will specify site controls and practices during the construction period to reduce stormwater pollution, but these controls also will help control the rates of stormwater discharge to minimize onsite erosion and reduce or otherwise prevent excessive offsite stormwater runoff rates and erosive forces.

Finally, the proposed construction activities are expected to minimally alter the existing drainage patterns at the Project site. Grading will produce a flat and uniformly sloping Project site as a platform for the battery storage units. Approximately half of the surface runoff will be directed to each of the onsite stormwater ponds. The final surface will have a 0.5 percent slope toward the north and toward the south, with a high point approximately in the north-south middle of the Project site. Perimeter drainage ditches will be installed along the western edge of the BESS area to collect runoff both from the undisturbed outer portions of the existing watersheds and runoff from the BESS area, and convey this runoff to the stormwater ponds. One stormwater pond will be placed in the northeastern quadrant of the Project and the other in the southeastern corner. These ponds (detention basins) will ensure that future peak discharges from the facility do not exceed the peak discharges for the 100-year, 24-hour storm under current conditions (see Appendix 4.10-A for pre- and post-construction drainage analyses, and Appendix 2-B for the Grading Plan).[13] This approach follows the County's drainage design criteria requirements (SCWA 1999; Solano County 2006).

While construction activities could increase the potential for erosion and sediment transport within and away from the Project site, and introduce contaminants into surrounding waterways, compliance with the NPDES Construction General Permit, the associated SWPPP, and use of BMPs will reduce the potential for these impacts to occur. The Project site is not in a mapped flood zone, which limits the potential to increase flood elevations and impede or redirect flood flows at the Project site. Adherence to the applicable federal and state laws (described later in this section) will ensure any impacts during the construction period will be temporary and less than significant.

Flooding[14]

As noted previously, no part of the Project site is within a FEMA-designated 100-year flood zone or a dam inundation zone, according to the FEMA Flood Insurance Rate Map (FEMA 2009). Additionally, the Project site sits at an elevation of more than 70 feet above sea level and is separated from Suisun Bay (closest estuarine water body to the Pacific Ocean) by nearly 30 miles of overland distance. Thus, there is no potential for a tsunami flow to reach the Project site. Also, there is no nearby waterbody, and therefore no possibility that a seiche wave could reach the Project site.[15]

[13] Appendix B (g) (14) (D) (i), (ii), (iii), and (iv)
[14] Appendix B (g) (14) (B) (iv); Appendix B (g) (14) (E) (vi)
[15] Appendix B (g) (14) (B) (iii)

This is a rural area, so there are no existing flood control facilities in the vicinity of the Project site or immediately downstream. There are culverts along the drainage ditch east of Byrnes Road, but these are only for drainage conveyance, but are not intended to provide any type of flood control.[16]

Based on these conditions, the Project site is not at risk from inundation by riverine flooding, tsunami, or seiche, and there is limited risk for release of pollutants due to Project inundation. Therefore, the Project will have no impact on surface water flooding or pollutant release on-site, or downstream from the site during construction.

Water Plan Conflict[17]

The Project will be regulated under the Water Quality Control Plan (Basin Plan) for the Sacramento River Basin and the San Joaquin River Basin (Central Valley Regional Water Quality Control Board [RWQCB] 2019). Neither the nature of the Project nor the type of development proposed will be likely to conflict with this Basin Plan, obstruct implementation of any of its provisions, or require a Basin Plan amendment. In addition, adherence to the conditions stipulated by the SWPPP and the NPDES General Construction Permit for the Project will insure that water quality impacts do not result in violations to, conflicts with, or obstructions of the Basin Plan. There will be no impact related to the Basin Plan.

Multiple groundwater sustainability agencies cooperated in developing the Solano Subbasin GSP prepared by the LSCE Team (2021). Water supplies within the subbasin consist of surface water supplies from State Water Project and Solano Project and groundwater. Water budget analysis presented in the Solano Subbasin GSP (LSCE Team 2021) indicates a cumulative increase in groundwater storage of about 990 AFY for the next 51 years with the subbasin sustainable yield estimated at 190,000 AFY, which is equal to the volume of groundwater extracted annually. In comparison, the expected construction water use for the Project is estimated at 30 AF over the 14-month construction period. In comparison to the annual groundwater use in the subbasin, this represents less than 0.02 percent of the annual groundwater demand. Furthermore, Project water use will be a temporary, one-time water use during construction. Therefore, the construction phase of the Project is expected to have a less than significant impact on the Central Valley RWQCB Basin Plan or the GSP for the Solano Subbasin.

4.10.3.2 Operations Impacts

Degrade Water Quality

Artificial water use during operations and maintenance of the Project will be negligible; therefore, the only surface water to have potential water quality impacts would be rainfall and surface runoff. Earth-disturbing activities will not occur during facility operations, and the construction equipment and associated fuels, lubricants, and other substances will no longer be present onsite. This will significantly limit the potential for surface runoff to pick up and transport pollutants. Additionally, the stormwater drainage system will route stormwater from the site through either of the two detention

[16] Appendix B (g) (14) (B) (iv)
[17] Appendix B (g) (14) (E) (i)

basins, controlling site discharges as required by state and local regulations (SCWA 1999; Solano County 2006).

As noted in Section 4.9, *Hazards and Hazardous Materials*, the California Hazardous Materials Release Response Plans and Inventory Law requires any business operations that handle amounts of hazardous materials at or above specified thresholds to prepare a Hazardous Materials Business Plan. The Hazardous Materials Business Plan will require that hazardous materials be stored in approved containers and in designated areas. This will ensure that all handling, storage, and disposal of hazardous materials is conducted in accordance with proven practices to prevent accidental release.

For these reasons, the impacts on water quality during operations and maintenance will be temporary and less than significant.

Deplete Groundwater[18]

Installation of the BESS units and other Project infrastructure will create up to 14 acres of impervious land within the 40.3-acre Project site. All of the Project site is currently considered to be pervious agricultural land. For the Project site, the change in impervious area represents a very minor loss of area available for groundwater recharge compared to the surface area of the Solano Subbasin. However, the wet ponds included in the Project design for stormwater management purposes will have an infiltration component that will aid in control of discharge from the ponds. Infiltration in each pond will be accomplished with a combination of pervious bottoms and a dry well. This intentional infiltration should come close to offsetting the loss of infiltration capacity due to new impervious surfaces.

No groundwater will be used during operations, so the Project will not negatively impact the groundwater resource in the Solano Subbasin by depleting groundwater through use. It also will not cause a significant change in the infiltration of surface water to recharge local groundwater. As a result, operation of the BESS facility will have a less than significant impact on the Solano Subbasin in terms of depleting groundwater.

Alter Runoff/Drainage[19]

The Project site is located on a drainage divide between HU12 watersheds, with effectively all surface runoff occurring as sheet flow. In addition, while the two halves of the site (northern and southern) drain separately, they each empty into the same drainage ditch that runs along the west side of Byrnes Road. This drainage ditch flows to the south into the Upper Ulatis Creek basin (HU Code: 180201630503). The regraded conditions of the site that will be in effect during operations will mimic existing conditions with the two stormwater retention basins limiting peak flows leaving the site to be the same rates as current conditions allow.

None of the drainage configuration changes will alter or encroach upon an identified, existing floodplain, or create a new floodplain. Appropriately designed energy dissipators will be installed at

[18] Appendix B (g) (14) (C) (iii)
[19] Appendix B (g) (14) (E) (vi)

each detention pond outlet to protect the downstream drainage channels from potential hydromodification effects.

The proposed facility configuration will not create situations where surface materials would be subject to erosion and subsequent sediment transport. Possibly higher amounts of surface runoff due to increased impervious surface area will be controlled by the stormwater retention basins. Finally, because of the small size of the drainage area within the Project site and the lack of identified flood zones, the potential for impeding or exacerbating flooding is very small.

Finally, the two stormwater retention basins created during Project construction will continue to function as designed for the period of facility operations. These basins will manage peak flows from stormwater runoff leaving the facility so they do not exceed pre-construction conditions, per County requirements (SCWA 1999; Solano County 2006). Further details are provided in the site-specific Hydrology and Hydraulics Report (Appendix 4.10-A).

As a result, operations and maintenance of the Project will not result in any of the following:

- Cause substantial erosion and sedimentation, either onsite or offsite;
- Increase surface runoff which results in flooding onsite or offsite;
- Produce runoff water volumes that either exceed the stormwater drainage system capacity or increase polluted runoff; or
- Cause changes (especially increases) in flood flows.

Therefore, Project operations should have a less than significant impact on surface runoff and drainage.

Flooding[20]

As noted previously, the Project site is not located within a FEMA 100-year flood zone, a dam inundation zone, or a tsunami or seiche risk zone. Construction of the Project will not change these conditions, and operating the facility will neither create nor increase these types of risks. Based on this situation, the Project site is not at risk of inundation or to release of pollutants due to Project inundation. Therefore, no impact to or from flooding is expected during Project operations.

Water Plan Conflict

As noted previously, during construction the Project will be regulated under the Basin Plan (Central Valley RWQCB 2019) and the Solano Subbasin GSP (LCSE Team 2021). This situation will not change during operations, and similarly there will be no need to modify the Basin Plan. Neither the nature of the Project nor the final development proposed will conflict with the Basin Plan or obstruct implementation of any of its provisions. In addition, by adhering to the conditions stipulated by the SWPPP and the General Construction Permit, water quality impacts will not result in violations to, conflicts with, or obstructions of the Basin Plan under Project operations.

[20] Appendix B (g) (14) (E) (vii)

As discussed in Section 4.10.3.1, development of the Solano Subbasin GSP was a cooperative effort (LSCA Team 2021). Groundwater is a significant water supply source in this subbasin at about 190,000 AFY. However, the expected water use for annual operations by the Project is estimated to be negligible. During the first 5 years of operation, the estimated water use for temporary landscaping irrigation will be up to 2 AF for the first year, decreasing by 20 to 30 percent annually over years 2 through 5 to 0 AFY. From operational year 6 though year 30 there is expected to be no water demand for operations.

4.10.3.3 CEQA Impact Analysis

IMPACT 4.10-1: Would the project violate any water quality standards or waste discharge requirements or otherwise substantially degrade surface or groundwater quality? (Less than significant)

The Project site will be disturbed during construction and will create potential to generate water quality pollutants, as described earlier (see Section 4.10.3.1). However, the Project will be required to comply with the Construction General Permit and its provisions to develop and implement a SWPPP. The SWPPP will be implemented during the construction phase to reduce stormwater pollution and protect receiving waters. The SWPPP will provide site-specific BMPs to minimize erosion and reduce (or prevent) erosive conditions during stormwater runoff. Many BMPs will remain long term and also be protective during the operations phase. Operations water use will be negligible, and no ground disturbance is anticipated during the operations phase, so water quality stresses will be very limited (see Section 4.10.3.2 for more details).

Complying with General Construction Permit implementation requirements during the construction phase will ensure that the impact on water quality will be limited and less than significant. Compliance will include the preparation and deployment of a SWPPP, SPCC Plan, and associated BMPs. Overall, the Project's impacts on water quality standards or waste discharge requirements will be temporary and less than significant.

IMPACT 4.10-2: 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? (Less than Significant)

The average annual volume of groundwater extraction in the Solano Subbasin is reported to be approximately 180,000 AFY, and the groundwater storage in the Subbasin has been stable to increasing based on the observed groundwater levels and model simulated water budget results, and they are not expected to decline in the future. As such, there is no danger of declining groundwater supply in the Subbasin in the foreseeable future, according to the GSP (LSCE Team 2021). Given that no groundwater supply shortage is anticipated during the next 50 years, and that the potential 30 AF Project construction groundwater supply needs are miniscule in comparison, representing less than 0.02 percent of the annual average groundwater extraction from the Subbasin, the potential impact on groundwater aquifers is negligeable (see Appendix 4.10-B).

IMPACT 4.10-3: 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 off-site?**

ii) **Substantially increase the rate or amount of surface run off in a manner which would result in flooding on- or off-site?**

iii) **Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?**

iv) **Impede or redirect flood flows? (Less than Significant)**

The Project site is located along a divide between two HU12 watershed areas (Gibson Canyon Creek-Sweany Creek HU Code 180201630502 and Upper Ulatis Creek HU Code 180201630503). This puts the area at the extreme edge of two watersheds, meaning the natural drainage here is sheet flow without any concentrated flow conveyances. In addition, the whole extended area (on both sides of the divide) is very flat, and the drainage, once it leaves the parcel, is artificially captured by the drainage ditch installed along the west side of Byrnes Road. This drainage ditch flows to the south, into Upper Ulatis Creek, and thus all drainage from the Project site ends up in the Upper Ulatis Creek watershed, in spite of its location being partly outside of this watershed.

As described in detail earlier (see Sections 4.10.3.1 and 4.10.3.2), the Project will be subject to compliance with the NPDES Construction General Permit and will include onsite stormwater controls. Two stormwater detention basins will be installed early in the construction period and will provide continuing control during operations. The Construction General Permit also will require development and implementation of a SWPPP. In addition to the detention basins, the SWPPP will detail site-specific BMPs to minimize erosion onsite, reduce or prevent increases in peak runoff rates, and limit offsite sediment transport via stormwater runoff. These controls will help limit potential flooding, both onsite and offsite, and, by trapping suspended sediment, they will limit offsite transport of any associated pollutants. Finally, the Project site is not in a FEMA-mapped flood zone and, due to its location on a watershed divide, is quite remote from any potential flood areas (mapped or otherwise). This reduces, or even eliminates, the potential for impeding or redirecting flood flows, within the Project site. Adherence to the federal and state laws will ensure the impacts are temporary and less than significant.

The Construction General Permit requirements will be adhered to during Project construction to reduce any potential impacts. Therefore, the expected impacts during any Project phase will be temporary and less than significant.

IMPACT 4.10-4: Is the project in flood hazard, tsunami, or seiche zones, risk release of pollutants due to the project inundation? (No Impact)

The Project site is not within a FEMA 100-year flood zone according to the Flood Insurance Rate Map (FEMA 2009). In addition, the County General Plan indicates the area is not within a 200-year flood

zone or a dam inundation zone (Solano County 2008, Chapter 5). Although the Project is less than 100 feet above sea level, it is separated from the Grizzly Bay (the estuarine water body located closest to the Project site) by nearly 20 miles of overland distance. Included in this distance are the Potrero Hills (with elevations over 100 feet) and the Montezuma Hills (with elevations of nearly 100 feet).

Based on these conditions, the Project site is not at risk from inundation by riverine flooding, tsunami, or seiche, and there is little to no risk for release of pollutants due to Project inundation from such an event. Therefore, the Project will have no impact on surface water flooding or pollutant release on-site, or downstream from the site during construction.

IMPACT 4.10-5: Would the project conflict with or obstruct implementation of water quality control plan or sustainable groundwater management plan? (Less than Significant)

As discussed earlier (see Section 4.10.3.1), the Project will be regulated under the Basin Plan (Central Valley RWQCB 2019). Neither the nature of the Project nor the type of development that is proposed will be likely to conflict with the Basin Plan or obstruct implementation of any of its provisions. In addition, by adhering to the conditions stipulated by the SWPPP and the NPDES permits for the Project, water quality impacts will not result in violations of, conflicts with, or obstructions to the Basin Plan. There will be no impact related to this water quality control plan.

The applicable GSP is for the Solano Subbasin (LSCE Team 2021). Groundwater from this subbasin is an important water supply source for the area, providing about 23 percent (LSCE Team 2024) of the general water supply for the area in 2023. The construction phase of the Project will require a modest water supply, potentially provided by groundwater (see Section 4.10.3.1). The expected water use for annual operations is expected to be initially very low, and limited to temporary landscape irrigation. During the first 5 years of Project operations, the estimated water use will be up to 2 AF for the first year, decreasing by 20 to 30 percent annually over years 2 through 5, to an ultimate annual use of 0 AFY. From operational year 6 and beyond there is expected to be no water demand for operations.

As a result of these considerations, the Project will not conflict with, or obstruct, the existing Basin Plan or GSP and therefore Project impacts on implementation of these plans will be less than significant.

4.10.3.4 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kilovolt generation tie (gen-tie) line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

Impacts to cultural resources associated with the PG&E facilities were included in the analysis provided above. As such, through the implementation of Project Design (PD) measures **PD HYD-1**

through **PD HYD-3**, these improvements will not have a substantial adverse effect on water resources or quality, and no additional mitigation measures will be required.

4.10.4 Cumulative Effects[21]

The geographic scope of analysis of cumulative effects includes the Project site, affected waterways, surrounding watersheds, and the local aquifer. These potentially could be impacted by site clearing, construction, and operations and maintenance of the Project. The cumulative development considerations for water quality include all development within the immediate Basin Plan area (the lower Sacramento River Basin). The cumulative context for groundwater use is the Solano Subbasin. This analysis considers the incremental effects of the Project to determine whether, when added to the effects of other projects in the cumulative scenario, they would cause or contribute to significant cumulative effects.

4.10.4.1 Degrade Water Quality

The Project will have the potential to contribute runoff and discharges to the Upper Ulatis Creek watershed that potentially could impact water quality in combination with other past, present, and future development. Also, Project development activities have the potential to infiltrate surface water and affect groundwater quality in the Basin and contribute to a potentially significant cumulative impact. However, the Project will be required to comply with the current (and any future) Basin Plan, applicable NPDES Permit requirements and ordinances, and other water quality regulations. In addition, Project activities during the operational phase (30 years) will require only occasional and limited use of hazardous materials, with no need for onsite storage of hazardous materials. During the construction phase of the Project, some onsite use and storage of hazardous materials will be needed. However, by following the required safeguards provided in the ordinances and regulations noted above, potential impacts will be limited. These regulatory requirements and the Project design will reduce any incremental contribution towards a cumulative impact to a less-than-cumulatively considerable level.

4.10.4.2 Deplete Groundwater

Two factors will ensure that this Project, in combination with other past, present, and future development in the Basin Plan area, will have a limited impact on groundwater resources in the Solano Subbasin:

- Groundwater is not proposed as a primary water source for Project construction, and no groundwater will be used during operations. If groundwater is eventually needed for Project construction and temporary landscape irrigation, the total amount required would be a very small percentage of the total groundwater extracted from the Subbasin on an annual basis. As currently evaluated, the Solano Subbasin is maintaining resource capacity if not improving it.

[21] Appendix B (g) (1)

- While the Project will add a small amount of impervious surface area to the site, it will also detain runoff in two onsite wet ponds providing local recharge. This groundwater recharge should offset the loss of pervious surfaces so that the net change will be negligible.

Therefore, the Project is not expected to contribute to cumulatively considerable impacts to groundwater by depleting the resource.

4.10.4.3 Alter Runoff/Drainage

The Project location is on a watershed divide with little to no surface water runon (from outside of the Project boundaries) and only overland flow surface runoff anticipated from the site (i.e., no concentrated "channel" flows). The proposed drainage conditions with stormwater management ponds in place will mimic existing conditions peak flow rates discharged from the facility. Ground-disturbing activities during construction will have little to no effect on runoff or drainage.

Project operations also will not impact runoff or drainage conditions because of the limited and passive activities. Disturbances to the ground surface during construction will only affect the drainage from the Project site, which will be managed with the stormwater ponds. Furthermore, with implementation of the SWPPP and Basin Plan requirements, any impacts will be limited to a less-than-cumulatively considerable level.

4.10.4.4 Flooding

No impacts relative to flood hazards, tsunami risk, or seiche zones were identified for this Project location. The changes anticipated during construction or operations will not alter that situation. As a result, the Project will not cause or contribute to any potential impacts to flooding, and any impacts realized will be at or below the less-than-cumulatively considerable level.

4.10.4.5 Water Plan Conflict

Two water plans were identified as relevant to this Project location: the Basin Plan (Central Valley RWQCB 2019), concerning water quality maintenance; and the GSP (LSCE Team 2021), concerning groundwater sustainability. This Project presents limited risks to water quality during any phase, and implementing existing requirements for protecting water quality will further control those risks. In addition, the relatively small amount of water needed for Project construction and operations will not create a conflict for sustaining the groundwater resource.

4.10.5 Mitigation Measures[22]

No significant adverse environmental impacts to water resources have been identified. Therefore, no official or specific water resources mitigation measures are required. Nonetheless, the Applicant proposes the following PD measures to help reduce impacts to water resources in areas affected by the proposed Project.

PD HYD-01: Site drainage plans will be in conformance with the Solano County Hydrology Manual (SCWA 1999) and Solano County land development standards (Solano County 2006).

[22] Appendix B (g) (1)

PD HYD-02: A SWPPP will be developed and implemented during construction activities in accordance with the California NPDES General Permit for Construction Activity. The SWPPP will include BMPs to control erosion and sediment transport, and limit discharge of pollutants during construction.

PD HYD-03: Appropriate stormwater drainage design and erosion control measures will be provided for the Project to minimize soil erosion and sediment transport associated with runoff from the site during operations.

4.10.6 Laws, Ordinances, Regulations, and Standards[23]

4.10.6.1 Federal

Federal Clean Water Act

Implementation of many of the requirements for the federal Clean Water Act has been delegated to the State of California. These are described in Section 4.10.6.2 below, under the Basin Plan.

National Pollutant Discharge Elimination System Program Clean Water Act §402

Under Clean Water Act Section 402, the NPDES stormwater permitting program controls water pollution by regulating point sources of pollution to waters of the United States. The RWQCB, Central Valley Region, administers the NPDES program in the Project site area. Solano County issues grading permits in conjunction with the Central Valley RWQCB.

Because the Project will result in the disturbance of 1.0 acre or more of soil with the potential to discharge to waters of the United States, it will be subject to the NPDES Construction General Permit. The permit regulates stormwater discharges associated with construction or demolition activities, such as clearing, grading, and excavation; construction of buildings; and linear underground projects, including installation of water pipelines and other utility lines.

The Construction General Permit requires that a project develop and implement a SWPPP that includes specific BMPs designed to prevent sediment and other pollutants from contacting stormwater as well as from moving off-site into receiving waters. BMPs fall into several categories, including erosion control, sediment control, waste management and good housekeeping, and are intended to protect surface water quality by preventing the off-site migration of eroded soil and construction-related pollutants from the construction area. Routine inspection of all BMPs is required under the provisions of the Construction General Permit. In addition, the SWPPP is required to contain a visual monitoring program and a chemical monitoring program for non-visible pollutants. After construction projects are required to restore the construction site to pre-project hydrological conditions to ensure the physical and biological integrity of aquatic ecosystems in their pre-construction condition.

In addition to stormwater discharges, the Construction General Permit also covers other non-stormwater discharges including irrigation of vegetative erosion control measures, water to control dust, uncontaminated groundwater from dewatering, and other discharges not subject to a separate

[23] Appendix B (i) (1) (A)

general NPDES permit adopted by the Central Valley RWQCB. The discharge of non-stormwater is authorized under the following conditions:

- The discharge does not cause or contribute to a violation of any water quality standard;
- The discharge does not violate any other provision of the General Permit;
- The discharge is not prohibited by the applicable Basin Plan;
- The discharger has included and implemented specific BMPs required by the General Permit to prevent or reduce the contact of the non-stormwater discharge with construction materials or equipment;
- The discharge does not contain toxic constituents in toxic amounts or (other) significant quantities of pollutants;
- The discharge is monitored and meets the applicable numeric action levels; and
- The discharger reports the sampling information in the SWPPP Annual Report.

Federal Emergency Management Agency

FEMA determines flood elevations and floodplain boundaries and distributes the flood insurance rate maps used in the National Flood Insurance Program. These maps identify the locations of special flood hazard areas, including 100-year floodplains (i.e., areas that would have a 1 percent annual chance of flooding).

Federal regulations governing development in a floodplain are set forth in Title 44, Part 60 of the Code of Federal Regulations. Those regulations enable FEMA to require municipalities participating in the National Flood Insurance Program to adopt certain flood hazard reduction standards for construction and development in 100-year floodplains.

4.10.6.2 State

Basin Plan – Beneficial Use and Water Quality Objectives (Clean Water Act §303)

The Project site is located within the jurisdiction of the Central Valley RWQCB. The Central Valley RWQCB is tasked with implementing the adopted Basin Plan for the Sacramento and San Joaquin River Basins through planning, permitting, and enforcement of established water quality objectives in accordance with state policy for water quality control. The RWQCB employs a range of beneficial use definitions for surface waters, groundwater basins, marshes, and mudflats that serve as the basis for establishing water quality objectives and discharge conditions and prohibitions. The Basin Plan identifies beneficial uses for the key surface water drainages throughout its jurisdiction. There are no designated “Minor Subareas” for the watershed in which the Project site is located; thus, beneficial uses have not been assigned for any local water bodies. However, the known uses of surface and groundwater near the Project site include agricultural, municipal water supply, and domestic water supply. However, no habitat (fish or wildlife), spawning, or recreation use designations have been applied, as no perennial waterbodies exist near the Project site (Central Valley RWQCB 2019).

California Fish and Game Code Section 1602

The California Fish and Game Code, under Section 1602, protects the natural flow, bed, channel, and bank of any river, stream, or lake under the jurisdiction of the California Department of Fish and Wildlife (CDFW). CDFW jurisdiction over lakes and streams encompasses the top of bank, or edge of riparian vegetation (as determined by the edge of a "dripline"), whichever is further (CDFW 1994). Applicants must submit a notification of lake or streambed alteration to CDFW for any projects affecting the bed, bank, or flow of water considered to be under CDFW jurisdiction. CDFW may issue a Lake and Streambed Alteration Agreement if it determines that the activity may substantially adversely affect fish and wildlife resources.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act gives the State Water Resources Control Board authority over waters of the State and water quality. The RWQCBs have local and regional authority. The area of the Project site is under the jurisdiction of the Central Valley RWQCB. The Central Valley RWQCB prepares and periodically updates the Basin Plan. Pursuant to the Clean Water Act NPDES program, the Porter-Cologne Act also delegates the authority to the RWQCBs to issue NPDES permits. If a proposed project or portion of a proposed project does not require a federal permit but does involve dredge or fill activities that may result in a discharge to waters of the State, the RWQCB has the option to regulate the dredge and fill activity under its state authority in the form of Waste Discharge Requirements.

Sustainable Groundwater Management Act

The Sustainable Groundwater Management Act of 2014 (Water Code §10723) provides a framework to manage groundwater in order to keep it a sustainable resource. In groundwater basins designated by the Department of Water Resources as medium and high priority, local public agencies and locally-controlled groundwater sustainability agencies are required to develop and implement GSPs or alternatives to GSPs. The Solano Subbasin GSP was developed for multiple groundwater sustainability agencies (LSCE Team 2021).

4.10.6.3 Local

Solano County

Solano County has an approved, entire county General Plan that provides water protection goals supported by policies and programs to achieve those goals. Chapter 4 (Resources) and Chapter 5 (Public Health and Safety) include the following goals, policies and implementation actions.

Chapter 4. Resources

Goals related to water resources:

RS.G-2: *Ensure continued presence and viability of the county's various natural resources.*

RS.G-8. *Achieve ongoing coordination between land use and water supply planning.*

RS.G-9. *Protect, monitor, restore and enhance the quality of surface and groundwater resources to meet the needs of all beneficial uses.*

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.*

Policies related to water resources:

RS.P-67. *Encourage new groundwater recharge opportunities.*

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.*

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.*

RS.P-76. *Promote sustainable management and efficient use of agricultural water resources..*

Implementation Actions related to water resources:

RS.I-70. *Require site plan elements to limit runoff from new development. These measures might include reduced pavement or site coverage, permeable pavement, vegetation that retains and filters stormwater, and/or drainage features. Limit the construction of extensive impermeable surfaces and promote the use of permeable materials for surfaces such as driveways, streets, parking lots, and sidewalks. (Related Policies: RS.P-73, RS.P-74, RS.P-75)*

Chapter 5. Public Health and Safety

Goals related to water resources:

HS.G-1. *Minimize the potential for loss of life and property resulting from natural or human-caused hazards..*

Policies related to water resources:

HS.P-1. *Prevent or correct upstream land use practices that contribute to increased rates of surface water runoff.*

HS.P-3. *Require new developments to incorporate devices capable of detaining the stormwater runoff caused by a 100-year storm event or to contribute to regional solutions to improve flood control, drainage, and water recharge.*

HS.P-4. *Encourage the use of stormwater detention that may also be used for groundwater recharge.*

HS.P-9. *Preserve open space and agricultural areas that are subject to natural flooding and are not designated for future urban growth; prohibit permanent structures in a designated floodway where such structures could increase risks to human life or restrict the carrying capacity of the floodway.*

HS.P-5. *Appropriately elevate and flood proof developments for human occupancy within the 100-year floodplain for the profile of a 100-year flood event.*

Implementation Actions related to water resources:

HS.I-6. *During project review, require the use of stormwater management techniques in developed upstream watershed areas that protect low-lying areas from flooding. Incorporate appropriate measures into the development review process to mitigate flooding and prevent erosion in and around county ditches. (Related Policies: HS.P-1, HS.P-2, HS.P-3, HS. HS.P-9)*

HS.I-9. *During project review, encourage the landscaping practices and plants that will reduce demand on water, retain runoff, decrease flooding, and recharge groundwater. (Related Policies: HS.P-1, HS.P-3, HS.P-4, HS.P-10)*

HS.I-11. *Increase the use of stormwater detention as a possible source of groundwater recharge as appropriate and only when increased retention does not increase groundwater levels to a point at which it increases the potential risk of liquefaction. (Related Policies: HS.P-4, HS.P-10)*

The **Solano County Municipal Code,** provides requirements for Flood Damage Prevention (Chapter 12.2), Well Standards (Chapter 13.10) , Drainage Facilities and Rights-of-Way (Chapter 26-77), and Drainage and Erosion Control (Chapter 31).

Chapter 12.2 (Flood Damage Prevention). *It is the purpose of this ordinance to promote the public health, safety, and general welfare; and to minimize public and private losses due to flood conditions in specific areas by legally enforceable regulations applied uniformly throughout the unincorporated County to all publicly and privately owned land within the flood prone, mudslide (i.e. mudflow) or flood related erosion areas. These provisions are designed:*

a) To protect human life and health;

b) To minimize expenditure of public money for costly flood control projects;

c) To minimize the need for rescue and relief efforts associated with flooding and generally undertaken at the expense of the general public;

d) To minimize prolonged business interruptions;

e) To minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; streets and bridges located in areas of special flood hazard;

f) To help maintain a stable tax base by providing for the second use and development of

g) To ensure that those who occupy the areas of special flood hazard assume responsibility for their actions.

h) *To ensur*e that potential buyers are notified that property is in an area of special flood hazard.

Chapter 13.10 (Well Standards). *It is the purpose of this chapter to regulate the (1) construction, (2) reconstruction, (3) destruction, and (4) inactivation of water, cathodic protection, and monitoring wells in such a manner that the ground water of the county will not be contaminated or polluted and that water obtained from wells will be suitable for beneficial use and will not jeopardize the health, safety or welfare of the people of this county.*

Chapter 26-77 (Drainage facilities and rights-of-way). *The design of a subdivision shall conform to good engineering practices, conform to Section 12.2-52, Standards for Subdivisions, Flood Damage Prevention of the Solano County Code, and shall provide for the proper drainage of the subdivision and all lots and improvements therein based on the runoff that can be anticipated from ultimate development of the watershed. The subdivision shall contain no undrained depressions. The subdivision and all lots and improvements therein shall be protected from off-site drainage or flood damage. All public facilities such as sewer, gas, electrical and water systems shall be located, elevated and constructed to minimize or eliminate potential flood damage. Any concentrations or increases of surface water resulting from the development of the subdivision must be conveyed by means of adequate facilities to a suitable natural watercourse in the area. If channels need to be constructed or improved to facilitate surface water removal, reasonable dedications to the appropriate public agency may be required. The design shall depict all those channels and all rights-of-way reasonably necessary for their improvements and maintenance. Such rights-of-way shall include, in addition to the channels themselves, and access right-of-way alongside the entire length of the channels.*

Chapter 31 (Grading, Drainage, Land Leveling, and Erosion Control). *The purpose of this chapter, in conjunction with Uniform Building Code as adopted, is to provide 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.*

Solano County Water Agency

The Solano County Water Agency (SCWA) was formed in 1951 by an Act of the California State Legislature and represents all the local agencies involved in water and flood management. The Agency was originally called the Solano County Flood Control and Water Conservation District. In 1988, the legislative act was changed to rename the agency and modify its governing board. SCWA authorities fall into two primary areas: water supply and flood control. Water supply includes supplying wholesale, untreated water to cities, districts, and state agencies. SCWA's flood control responsibilities include operating and maintaining the Ulatis Flood Control Project and the Green Valley Flood Control Project. SCWA also has authority to address all flood control matters within its service area boundaries.

City of Vacaville

The City of Vacaville has an approved city General Plan that provides water protection goals supported by policies and programs to achieve those goals. Chapter 4 (Conservation and Open Space Element), Chapter 6 (Public Services and Facilities Element) and Chapter 7 (Safety Element) include the following goals, policies and Implementation actions.

Chapter 4: Conservation and Open Space Element

Goals related to water resources

***COS-13**: Promote water conservation as an important part of a long-term and sustainable water supply.*

***COS-14:** Protect the quality and supply of surface water and groundwater resources.*

Policies related to water resources

***COS-P13.4:** Require new development to incorporate Best Management Practices (BMPs) for water use and efficiency and demonstrate specific water conservation measures.*

***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.*

Chapter 6: Public Services and Facilities Element

Goals related to water resources

***PUB-10**: Ensure that a reliable water supply can be provided within the city.*

Policies related to water resources

***PUB-P10.2:** Require new development to construct water source or storage facilities if the project's Water Supply Assessment indicates a deficiency in the water source.*

Chapter 7: Safety Element

Goals related to water resources

***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.*

Policies related to water resources

***SAF-P2.4:** Design storm drainage infrastructure to serve dual purposes to the extent possible. This includes the following:*

- *Drainage facilities integrated into recreation corridors with bike paths, sidewalks, and landscaping.*
- *Drainage channels integrated with transportation and environmental corridors.*
- *Active and passive recreation areas incorporated into detention basins where feasible*
- *Drainage facilities designed to incorporate natural infrastructure and support ecosystem health where feasible.*

SAF-P2.5: *Maintain open areas needed to retain stormwater and prevent flooding of urban or agricultural land.*

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 onsite resilience. Support financing efforts to increase community access to these features.*

4.10.7 Agencies and Agency Contacts

Table 4.10-1 presents information on required water resources permits and agency contacts for the Project.

Table 4.10-1. Water Resource Agencies and Contacts[24]

Agency/Address	Contact/Telephone	Permits/Reason for Involvement
Solano County Water Agency (SCWA) 810 Vaca Valley Parkway, Suite 202 Vacaville, CA 95688	Deborah Barr, PE Manager of Engineering (707) 455-1104 dbarr@scwa2.com	Stormwater Requirements
Solano Irrigation District 810 Vaca Valley Parkway, Suite 201 Vacaville, CA 95688	Matthew Hobbs Water & Power Operations Manager Phone: 707-455-4001 mhobbs@sidwater.org	Water Supply
Solano County Resource Management Public Works Engineering 675 Texas Street, Suite 5500 Fairfield, CA 94533	Pejman Mehrfar Senior Civil Engineer, Grading (707) 784-6073 Grading@solanocounty.com	County Grading Permit
Solano County Department of Resource Management 675 Texas Street, Suite 5500 Fairfield, CA 94533	Ashley Feigel Environmental Health Specialist (707) 784-6765 ehtechnical@solanocounty.com	Well Construction Permit
Central Valley RWQCB 11020 Sun Center Drive, #200 Rancho Cordova, CA 95670-6114	Scott Armstrong Senior Engineering Geologist (916) 464-4616 scott.armstrong@waterboards.ca.gov	An NPDES permit is not anticipated to be required for well construction task. No permit is required for discharging well development or test water to ground surface assuming no water runoff to drainage ditches. Notify Central Valley RWQCB prior to start of well discharge with project information including site location, expected water discharge volume, and discharge schedule.
Central Valley RWQCB 11020 Sun Center Drive, #200 Rancho Cordova, CA 95670-6114	Stephanie Tadlock Senior Environmental Scientist 916-464-4644Stephanie.Tadlock@waterboards.ca.gov	Clean Water Act Section 401, RWQCB WDR

[24] Appendix B (i) (1) (B) and Appendix B (i) (2)

4.10.8 Required Permits and Permit Schedule

Agency-required permits and permit acquisition schedules related to water resources are summarized below in Table 4.10-2. Agencies will be contacted to obtain the necessary permits at the appropriate time.

Table 4.10-2. Permit Schedule[25]

Permit/Approval Required	Schedule
Construction General Permit Registration with the State's NPDES permit for Storm Water Discharges Associated with Construction Activities	• Prepare Stormwater Pollution Prevention Plan (2 months) • File for Waste Discharge Identification (WDID) number (1 month) • File Notice of Intent and required Documents (1 month) • Pay applicable fees
Well Construction Permit by Solano County Department of Resource Management	• Prepare and submit permit application (1 week) • Pay permit fee • County permit processing time (2 weeks) • Schedule county inspection for well seal inspection

4.10.9 References[26]

CDFW (California Department of Fish and Wildlife). 1994. A Field Guide to Lake and Streambed Alteration Agreements. Sections 1600-1616, California Fish and Game Code. Environmental Services Division.

Central Valley RWQCB (California Regional Water Quality Control Board, Central Valley Region). 2019. Water Quality Control Plan (Basin Plan) for the California Regional Water Quality Control Board, Central Valley Region. Fifth Edition, Revised February 2019 (with Approved Amendments). Sacramento River Basin and the San Joaquin River Basin.

DWR (California Department of Water Resources). 2003. California's Groundwater, Bulletin 118. Sacramento River Hydrologic Region, Sacramento Valley Groundwater Basin, Solano Subbasin. Updated February 2004. Available online at: https://data.cnra.ca.gov/dataset/12e534ff-f604-4ba9-82db-486d81e082ff/ resource/43ccb3a0-343d-45a4-a162-1efd8c1c239f/download/b118_2003_basindescription_5_021_66.pdf (accessed September 2024).

FEMA (Federal Emergency Management Agency). 2009. Flood Insurance Rate Map, Solano County and Unincorporated Areas. Panels 168 (Map No. 06095C0168E) and 169 (Map No. 06095C0169E) of 730. Effective Date May 4, 2009.

LSCE Team (Luhdorff & Scalmanini Consulting Engineers, Kennedy/Jenks Consultants, Inc., Davids Engineering, Inc., ERA Economics, and West Yost Associates). 2021. Solano Subbasin Groundwater Sustainability Plan. November 30, 2021. Approved by California Department of Water Resources on January 18, 2024.

LSCE Team. 2024. Solano County and Solano Subbasin Groundwater Sustainability. Annual Report – Water Year 2023. March.

[25] Appendix B (i) (3)
[26] Appendix B (g) (1)

SCWA (Solano County Water Agency). 1999. Hydrology Manual. Prepared by West Yost & Associates Consulting Engineers. 074-98-04.01.

SID (Solano Irrigation District). 2024. Construction Water. Available online at: https://www.sidwater.org/175/Construction-Water (accessed August 2024).

Solano County. 2006. Road Improvement Standards and Land Development Requirements. Prepared by the Department of Resource Management. Adopted February 28, 2006.

Solano County. 2008. General Plan, Planning for a Sustainable Solano County. General Plan Citizen's Advisory Committee (February 4, 2008), Planning Commission (Resolution No. 4500, June 5, 2008), Board of Supervisors (Resolution No. 2008-183, August 5, 2008), Solano County Voters (Measure T, November 4, 2008).

WorldClimate. 2024. Online data source: http://www.worldclimate.com/climate/us/california/. Accessed August 2024.

4.11 Land Use and Planning

This section provides a discussion of existing and proposed land uses and an evaluation of potential land use impacts associated with the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). For this analysis, the affected environment study area is defined as those areas within 1 mile of the Project site or within 0.25 mile of any Project-related linear facilities.

Land use issues have been identified and evaluated based on on-site surveys; review of current U.S. Geological Survey 7.5-minute topographic quadrangle maps; aerial photography; review of local land use ordinances; and review of land use goals and policies identified in the Solano County General Plan, City of Vacaville General Plan, Solano County Zoning Code, and associated maps.

4.11.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Physically divide an established community?				X
2.	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?			X	

4.11.2 Affected Environment[1,2]

The Project site is on one parcel (Assessor's Parcel Number [APN] 0141-030-090)[3] of private land that is approximately 40.3 acres. The Project site contains no structures and is a crop field that appeared fallow and covered with native grass at the time the Phase I Environmental Site Assessment (ESA) was conducted in July 2024 (Appendix 4.9-A). Of this area, permanent Project features will include approximately 15.6 acres for the Project facilities within an 18.5-acre graded area. The Project will include a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line sited on an approximately 19.4-acre gen-tie corridor, portions of which will be installed overhead and underground. The Project also includes an approximately 7.2-acre offsite gen-tie laydown area adjacent to the gen-tie corridor. Project site grading will require approximately 24,550 cubic yards of import fill to achieve 0.5 percent surface slope for site drainage purposes.

The Project site is primarily surrounded by agricultural and residential land uses, with a residence located across Kilkenny Road directly to the north. Additional rural residences also exist further north, as well as to the south, east, and west of the Project site separated by agricultural lands. The Project

[1] Appendix B (g) (1)
[2] Appendix B (g) (3) (A), Appendix B (g) (3) (A) (i)
[3] Appendix B (g) (3) (C)

site is also located approximately 250 feet southeast of the City of Vacaville jurisdictional boundary, and approximately 5 miles northeast of the city center. Existing agricultural lands exist around the Project site in all directions. Interstate 80 (I-80) is approximately 0.6 miles northwest of the Project site and the Pacific Gas and Electric (PG&E) Vaca-Dixon Substation is located across I-80, approximately 0.65 mile northwest of the Project site.

A review of historic aerial imagery available in Google Earth and provided by the National Agriculture Imagery Program (NAIP) identified that the Project site appeared to be used as a crop field from 1937 to 1993, an orchard from 2006 to 2016, and a crop field again from 2020 to 2022. An irrigation ditch/canal was also observed abutting the northern boundary of the Project site (Appendix 4.9-A).

Existing land uses, General Plan Land Use Designations, and Zoning Districts are shown on Figure 4.11-1, Figure 4.11-2, and Figure 4.11-3, respectively, and Table 4.11-1 provides the associated acreages.[4]

The following subsections describe the existing land uses within 1 mile of the Project site (Section 4.11.2.1); land use designations, zoning districts, and other relevant information (as applicable) for Solano County and City of Vacaville are discussed in Sections 4.11.2.2 and 4.11.2.3, respectively. Refer to Section 4.11.6, *Laws, Ordinances, Regulations, and Standards*, for additional, potentially applicable policies and ordinances.

Table 4.11-1. Existing Land Uses, General Plan Land Use Designations, and Zoning Districts Within 1 Mile of the Project Site

Category	Solano County (acres)	City of Vacaville (acres)
Existing Land Use		
Cultivated Crops	1,703.8	170.3
Developed, High Intensity	41.5	11.6
Developed, Medium Intensity	32	25.6
Developed, Low Intensity	61	16.2
Developed, Open Space	108.8	18.7
Emergent Herbaceous Wetlands	22	1.2
Hay/Pasture	166.3	32
Grassland/Herbaceous	313	20.4
Open Water	1.5	N/A
Zoning Districts		
Exclusive Agriculture (A-40)	1,876.4	N/A
Exclusive Agriculture (A-20)	277.1	N/A
Rural Residential (RR-5)	73.4	N/A
Rural Residential (RR-2.5)	201.2	N/A
Commercial Service (CS)	21.8	N/A
Business Park (BP)	N/A	126.9
Highway Commercial (CH)	N/A	21.2
Residential High Density (RHD)	N/A	12.2

[4] Appendix B (g) (3) (A) (iv)

Category	Solano County (acres)	City of Vacaville (acres)
Public/Institutional (PF)	N/A	14.8
Agriculture (AG)	N/A	1.5
Technology Park (TP)	N/A	37.8
Industrial Park (IP)	N/A	0.2
General Plan Land Use Designations		
Agriculture (AG)	2,000.1	51.4
Rural Residential (RR)	233.3	0.2
Public Quasi-Public (PQP)	157.1	N/A
Urban Residential (UR)	36.9	N/A
Urban Commercial (UC)	19.9	N/A
Urban Industrial (UI)	2.7	N/A
Business Park	N/A	129.5
Highway Commercial	N/A	17.9
General Commercial	N/A	13.5
Residential High Density	N/A	12.4
Public/Institutional	N/A	14.9
Technology Park	N/A	36.5
Public Open Space	N/A	0.1
Public Park	N/A	0.1
Residential Estate	N/A	0.1

Sources: Solano County 2024a, Solano County 2008, Dewitz and USGS 2024, City of Vacaville 2024a, City of Vacaville 2015

NextEra Energy Corby Battery Energy Storage System Project

Figure 4-11.1 Land Use

Solano County, CA

Vacaville

- Buffer (1-mile)
- City of Vacaville Boundary

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

PG&E Features

- Gen-tie (Overhead; PG&E)

National Land Cover Database

- Cultivated Crops
- Developed, High Intensity
- Developed, Medium Intensity
- Developed, Low Intensity
- Developed, Open Space
- Emergent Herbaceous Wetlands
- Hay/Pasture
- Herbaceous
- Open Water

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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NextEra Energy Corby Battery Energy Storage System Project

Figure 4-11.2 General Plan Designations

Solano County, CA

Vacaville

Proposed Features
- Buffer (1-mile)
- City of Vacaville Boundary
- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

PG&E Features
- Gen-tie (Overhead; PG&E)

Solano County General Plan
- Agricultural Reserve Overlay
- Agriculture
- Incorporated Area
- Public/Quasi-Public
- Rural Residential
- Urban Commercial
- Urban Industrial
- Urban Residential

City of Vacaville General Plan
- Agriculture
- Business Park
- Commercial General
- Commercial Highway
- Public Open Space
- Public Park
- Public/Institutional
- Residential Estate
- Residential High Density
- Residential Rural
- Technology Park

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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NextEra Energy Corby Battery Energy Storage System Project

Figure 4-11.3 Zoning Districts

Solano County, CA

Vacaville

Proposed Features
- Buffer (1-mile)
- City Boundary
- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

PG&E Features
- Gen-tie (Overhead; PG&E)

Solano County Zoning
- Commercial Service (CS)
- Exclusive Agriculture A-20 (A-20)
- Exclusive Agriculture A-40 (A-40)
- Rural Residential RR-2.5 (RR-2.5)
- Rural Residential RR-5 (RR-5)

City of Vacaville Zoning
- Agriculture (20 acres) (AG)
- Business Park (BP)
- Highway Commercial (CH)
- Industrial Park (IP)
- Public Facilities (PF)
- Residential High Density (RH)
- Technology Park (TP)

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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4.11.2.1 Existing Land Uses

The Multi-Resolution Land Characteristics Consortium (MRLC 2024) provides the following definitions of the existing land use classifications shown in Figure 4.11-1 and listed in Table 4.11-1:

- **Cultivated Crops**: areas used for the production of annual crops, such as corn, soybeans, vegetables, tobacco, and cotton, and also perennial woody crops such as orchards and vineyards. Crop vegetation accounts for greater than 20 percent of total vegetation. This class also includes all land being actively tilled.
- **Developed, High Intensity**: highly developed areas where people reside or work in high numbers. Examples include apartment complexes, row houses, and commercial/industrial. Impervious surfaces account for 80 percent to 100 percent of the total cover.
- **Developed, Medium Intensity**: areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 50 percent to 79 percent of the total cover. These areas most commonly include single-family housing units.
- **Developed, Low Intensity**: areas with a mixture of constructed materials and vegetation. Impervious surfaces account for 20 percent to 49 percent of total cover. These areas most commonly include single-family housing units.
- **Developed, Open Space**: areas with a mixture of some constructed materials, but mostly vegetation in the form of lawn grasses. Impervious surfaces account for less than 20 percent of total cover. These areas most commonly include large-lot, single-family housing units, parks, golf courses, and vegetation planted in developed settings for recreation, erosion control, or aesthetic purposes.
- **Emergent Herbaceous Wetlands**: areas where perennial herbaceous vegetation accounts for greater than 80 percent of vegetative cover and the soil or substrate is periodically saturated with or covered with water.
- **Hay/Pasture**: areas of grasses, legumes, or grass-legume mixtures planted for livestock grazing or the production of seed or hay crops, typically on a perennial cycle. Pasture/hay vegetation accounts for greater than 20 percent of total vegetation.
- **Grassland/Herbaceous**: areas dominated by graminoid or herbaceous vegetation, generally greater than 80 percent of total vegetation. These areas are not subject to intensive management, such as tilling, but can be used for grazing.
- **Open Water**: areas of open water, generally with less than 25 percent cover of vegetation or soil.

4.11.2.2 Solano County

Project Site

The Project site and initial portion of the gen-tie line south of Kilkenny Road lie within Solano County's (County) jurisdiction and land uses on the Project site are governed by the Solano County General Plan (County General Plan) and Zoning Ordinance (refer to Section 4.11.6, *Laws, Ordinances, Regulations, and Standards*). Additionally, PG&E's portion of the gen-tie line located north of I-80 is

also within the County's jurisdiction. The Project site and the portion of the gen-tie line located within Solano County jurisdiction are zoned Exclusive Agriculture (A-40) and have a County General Plan land use designation of Agriculture (AG). The PG&E portion of the gen-tie line is zoned Exclusive Agriculture (A-20) and has a County General Plan land use designation of Public Quasi-Public (PQP). These are defined as follows:

- **Exclusive Agriculture (A-40 and A-20)** require a minimum lot area of 40 acres or 20 acres, respectively. The minimum dwelling unit size is 1,000 square feet, and height limits are 35 feet and 50 feet for agricultural processing uses. Secondary dwelling units are also permitted at a maximum of 2,400 square feet. Subject to the provisions of the Section 28.21.20 of the Solano County Code, this zoning district permits agricultural uses, agricultural processing facilities (e.g., wineries), animal facilities and operations (e.g., confined animal facilities, fowl/poultry ranches, hog ranches, and slaughterhouses), other agricultural operations (e.g., employee housing), residential uses, cannabis cultivation, recreational uses, agricultural education uses, public assembly uses (e.g., public stables and special event facilities), retail uses (e.g., roadside stands), office uses (e.g., agricultural research), tourist uses (e.g., agritourism and vacation house rentals), commercial service uses (e.g., agricultural services and animal hospitals/veterinary clinics), industrial uses (e.g., transitional industrial), communications uses (e.g., wireless communications facilities), infrastructure uses (e.g., commercial solar energy, commercial wind energy, noncommercial wind turbines, injection wells, oil or gas wells, pipelines, surface mining, and utility facilities), public service uses, temporary construction and infrastructure uses, and resource protection uses.
- **Agriculture (AG)** is established to provide areas for the practice of agriculture as the primary use, including areas that contribute significantly to the local agricultural economy. The AG designation also allows for secondary uses that support the economic viability of agriculture. The AG land use designation protects these areas from intrusion by nonagricultural uses and other uses that do not directly support the economic viability of agriculture (Solano County 2008).
- **Public Quasi-Public (PQP)** is established to provide for airports, schools, solid waste facilities, hazardous waste facilities, and other public and quasi-public facilities (Solano County 2008).

According to the Solano County General Plan, the entire study area is outside of any overlay zones, special study areas, priority habitat areas, resource conservation areas, delta and marsh protection areas, and mineral resource areas (Solano County 2008).

The Project site is located approximately 7.25 miles north of Travis Air Force Base (AFB) and is within the Travis AFB Airport Influence Area (AIA) as identified in the Travis AFB Land Use Compatibility Plan (LUCP), which has been adopted by the Solano County Airport Land Use Commission (ALUC) (Solano County 2024b). Specifically, the Project site is located within Zone D of the LUCP. According to Table 1 of the LUCP, the only prohibited uses are Hazards to Flight, which includes physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Limitations on the height of structures and notice of aircraft overflights are the only compatibility factors within this

zone. ALUC review is required for objects in Zone D only if they are greater than 200 feet above ground level. According to the LUCP, there are no particular safety requirements for Zone D (Solano County 2024b).

Battery Energy Storage Uses in Solano County

Zoning

Pursuant to Solano County Code Section 28.21.20, "utility facilities or infrastructure, outside of right-of-way" are conditional uses permitted within the A-40 zoning district with a Use Permit. Although the Solano County Code does not contain specific criteria for battery energy storage system (BESS) facilities, the aforementioned use includes BESS facilities and the general criteria used for other types of use permits are applied.

Furthermore, pursuant to Section 28.78.20(B)(9), the "utility facilities or infrastructure, outside of right-of-way" use includes structures for the transmission of electricity and this use is permitted in any district. Accordingly, the portions of the proposed gen-tie line located within the County's jurisdiction would be permitted in the existing zones, including the A-40 zoned parcel located directly west of the Project parcel, and the A-20 zoned PG&E Vaca-Dixon Substation parcel.

Land Use

The County General Plan does not specifically allow for nor prohibit the development of BESS facilities within any land use designation. However, the County General Plan does state that the County has been a leader in renewable energy production and will continue to increase its use of wind, solar, and other alternatives to fossil fuels. The Resources Element of the County General Plan also includes an Energy Resources and Conservation section, which addresses energy sources and the conservation and use of energy in Solano County (Solano County 2008). BESS facilities are not considered in this section of the County General Plan, as battery energy storage use is relatively new to Solano County. Accordingly, the County is currently developing land use policies specific to BESS facilities as discussed in the following section.

Recent or Proposed Zone Changes and/or General Plan Amendments[5]

On January 23, 2024, the County enacted a 45-day, interim urgency measure via Ordinance No. 2024-1852-U that prohibited new commercial BESS facilities within the unincorporated territory of Solano County. On February 27, 2024, the County enacted a 2-year moratorium extension on the approval of "front-of-the-meter" BESS via Ordinance No. 2024-1852-U-E to allow planning staff time to develop land use standards that ensure public safety, health, and welfare. "Front-of-meter" BESS facilities include utility-scale generation, utility-scale energy storage, and connection to transmission and distribution lines, and generally rely on more complex grid management systems and high rates of electricity turnover. In contrast, "behind-the-meter" BESS facilities are primarily used to meet single customer onsite energy storage needs. The Project would be considered a "front-of-the-meter" BESS facility and is therefore subject to the County's moratorium pursuant to this ordinance. The current moratorium expires on January 23, 2026. This change in County policy affects the proposed Project

[5] Appendix B (g) (3) (A) (ii) and (iii)

and is the primary reason for the Applicant's decision to pursue approval via the CEC's Opt-In Certification Program.

In addition to developing land use policies specific to BESS facilities, a primary reason for the County's adoption of Ordinance No. 2024-1853-U-E is due to several recent fires at BESS facilities both in California and nationwide. The County's ordinance acknowledges that lithium-ion batteries are inherently safe and stable, but certain conditions can elevate the risk of fire and thermal runaways. Accordingly, the County seeks to develop standards to implement Senate Bill (SB) 38, adopted on October 7, 2023, which amends California Public Resources Code Section 761.3 to require BESS facilities in California to establish an emergency response and emergency action plan for the facility and surrounding residents, neighboring properties, emergency responders, and the environment. In accordance with SB 38, the owner or operator of a BESS facility must coordinate with local emergency management agencies, unified program agencies, and local first responders to develop the plan and submit to the County where the facility is located. The Applicant will develop an emergency response and emergency action plan in accordance with SB 38 and as required by Project Design Measures **PD HYD-04** and **PD HYD-05**.

Prior to the implementation of Ordinance No. 2024-1852-U-E, the Applicant filed a CUP application with the County for the proposed Project in June 2023. The County issued a preliminary comment letter during the pre-application process (Appendix 4.11-A), which contained the County's preliminary input on Project design requirements and environmental considerations. Although the CUP application was not processed due to the implementation of Ordinance No. 2024-1852-U-E, the Applicant has incorporated the County's input into the current Project design, and environmental concerns raised by the County are addressed in this Application.

4.11.2.3 City of Vacaville

Gen-Tie Line

As previously described, the gen-tie line will connect to the PG&E Vaca-Dixon Substation via a 1.1-mile-long 230-kV gen-tie line, portions of which will be installed overhead and underground. The initial overhead portion of the gen-tie line located within the Project site, the underground portion of the gen-tie line located south of Kilkenny Road, and the PG&E portion of the gen-tie line north of I-80 will be located within the jurisdiction of the County. However, the City of Vacaville jurisdictional boundary is located approximately 250 feet northwest of the Project site, and the gen-tie line will cross through City of Vacaville jurisdiction after entering Kilkenny Road. Accordingly, both the underground and overhead portions of the gen-tie line located north of (and within) Kilkenny Road and south of I-80 will be within the City's jurisdiction and governed by the City of Vacaville General Plan (City General Plan) and Zoning Ordinance (refer to Section 4.11.6, *Laws, Ordinances, Regulations, and Standards*). The portion of the gen-tie line within the City's jurisdiction crosses areas zoned as Business Park (BP) and Residential High Density (RH), with the same City General Plan land use designations. These are defined as follows:

- **BP** applies to sites in a landscaped setting for office centers, research-and-development facilities, and, under appropriate conditions, medical and institutional uses. Secondary uses

may include limited industrial activities, small-scale warehousing and distribution operations, and limited retail sales accessory to these areas. Commercial uses and services for employees and businesses (e.g., delicatessens, childcare, dry cleaners, and branch banks) are required as a means of reducing trips and vehicle miles traveled. These uses must be centrally located and have adequate pedestrian access. The commercial uses and services must also be ancillary, rather than primary uses, and there must be adequate public infrastructure to support the proposed use. Policy plans and specific plans may additionally allow for commercial development (City of Vacaville 2015).

- **RH** provides opportunities for high density multiple residential uses, including attached townhouses, condominiums, and apartments, subject to appropriate standards. The base density is 20.1 units per gross acre, and the maximum potential density is 30 units per gross acre (City of Vacaville 2015).

The underground and overhead portions of the gen-tie line within the City's jurisdiction are also located within the Northeast Growth Area of the City General Plan. Refer to the *Land Use* discussion below for additional information.

Zoning

Chapter 14.02.060 of the City's Municipal Code contains the City's Use Classifications. Transmission lines or similar types of linear facilities are not included as a specific use within the City's Municipal Code. Additionally, the City's Municipal Code does not contain an exception allowing for the installation of transmission lines in any zoning district, similar to the County's Zoning Ordinance as described above. However, there are multiple instances of existing high-voltage transmission lines in the City of Vacaville that cross a variety of zoning districts, including residential. Electrical transmission and distribution lines, as well as other linear utilities, are an integral part of any type of development and do not appear to be specially addressed within the City's Municipal Code. Based on preliminary consultation with the City (Morris 2024), the City's Municipal Code does not address transmission line siting or other public utilities due to the infrequent need to address new linear utilities as independent approvals. Therefore, high-voltage transmission lines such as the proposed gen-tie line do not appear to be considered development in kind with uses regulated by the zoning ordinance.

Municipal Code Chapter 14.12.050, *Undergrounding of Utilities,* requires developers to underground existing and proposed utility distribution or transmission facilities, including electric lines, within or abutting subdivisions or developments. However, high-voltage lines with ratings greater than 45,000 kilovolt-amperes (kVA) such as the proposed gen-tie line are exempt from this requirement. This was confirmed through preliminary consultation with the City in July 2023, prior to the Solano County and City of Vacaville BESS moratoriums.

Land Use

As previously described, the portions of the gen-tie line within the City's jurisdiction are located within the Northeast Growth Area of the City's General Plan. The Northeast Growth Area is one of the City's Long-Range Projects that encompasses approximately 1,400 acres and is primarily designated as an

economic development area. The City expects urban development within this area but does not anticipate this area to be fully developed by the General Plan horizon year of 2035. The General Plan land use designations for the portion of the gen-tie corridor located within the City's jurisdiction match the existing zoning districts of BP and RH (City of Vacaville 2015).

Recent or Proposed Zone Changes and/or General Plan Amendments[6]

On March 12, 2024, the City of Vacaville City Council held a study session during the regular meeting to discuss a potential moratorium on BESS facilities. In line with the County's decision to enact County Ordinance No. 2024-1853-U-E, the City Council also determined that the potential for development of BESS facilities in Vacaville without adequate land use policies and standards in place presents a current and immediate threat to the public's safety and welfare, and that the approval of additional entitlements for BESS facilities would result in that threat to public safety and welfare. Accordingly, the City Council voted 6-1 to direct staff to prepare an interim ordinance as an urgency measure to address growing concerns with BESS facilities while the City studies the safety and feasibility of such a use within City limits. At the May 14, 2024, City Council meeting, the City Council passed an urgency measure in the form of a 45-day interim ordinance (Ordinance No. 1993) prohibiting BESS facilities within Vacaville city limits. At the June 25, 2024, City Council meeting, the City Council enacted a 2-year moratorium extension on the approval of "front-of-the-meter" battery energy storage systems (City of Vacaville 2024b). This change in City policy does not affect the proposed Project because the proposed BESS facility would be located within the County and only portions of the gen-tie line would be located within the City.

4.11.2.4 Required Discretionary Easements and Non-Discretionary Encroachment Permits

The Project will connect to the PG&E Vaca-Dixon Substation, northwest of the Project site and across I-80, via a 1.1-mile-long 230-kV gen-tie line, portions of which will be installed overhead and underground. The underground portions of the gen-tie line will run east-west parallel to and crossing Kilkenny Road, either within acquired private easements on adjacent parcels or within the City of Vacaville road right-of-way. The overhead portions include two structures on the Project site within Solano County, four structures between Kilkenny Road and I-80 on private land owned by the Applicant within the City of Vacaville, and up to four structures north of I-80 on PG&E's Vaca-Dixon Substation property within Solano County, for a total of up to 10 overhead gen-tie structures. The first section of the gen-tie corridor will begin at the northwest corner of the Project site and will follow one of the below route options:

1) **Underground Route Option #1** will be underground parallel to and crossing Kilkenny Road and a Solano Irrigation District (SID) canal. This route would be located within easements secured from private landowners (APNs 0141-030-080 and 0141-010-030) and SID, and would require an encroachment permit from the City of Vacaville to cross Kilkenny Road.
2) **Underground Route Option #2** would be located within an easement secured from the private landowner of the parcel immediately west of the Project site (APN 0141-030-080) and

[6] Appendix B (g) (3) (A) (ii) and (iii)

would require an encroachment permit from the City of Vacaville to install approximately 1,550 feet of the gen-tie within the City-maintained Kilkenny Road right-of-way.

For either Underground Route Option #1 or Underground Route Option #2, various discretionary easements and non-discretionary encroachment permits would be required from local jurisdictions and property owners as shown in Table 4.11-2 and described in further detail below.

Table 4.11-2. Required Discretionary Easements and Non-Discretionary Encroachment Permits

Jurisdiction	Underground Route Option #1	Underground Route Option #2
Solano County	**Encroachment Permits**: 1. Byrnes Road site ingress/egress 2. Kilkenny Road closure for gen-tie line crossing.	**Encroachment Permits**: 1. Byrnes Road site ingress/egress 2. Kilkenny Road closure for HDD[1] work to place gen-tie line within the road right-of-way
City of Vacaville	**Encroachment Permits**: 1. Kilkenny Road closure for gen-tie line crossing 2. Gen-tie line crossing under Kilkenny Road	**Encroachment Permit**: 1. Kilkenny Road closure for HDD work to place gen-tie line within the road right-of-way 2. Gen-tie line placement within Kilkenny Road right-of-way
Solano Irrigation District	**Easement**: 1. Gen-tie line crossing under SID canal north of Kilkenny Road. 2. Gen-tie line crossing over SID canal adjacent to I-80 (to be obtained by PG&E)	**Easement**: 1. Gen-tie line crossing over SID canal adjacent to I-80 (to be obtained by PG&E)

1/ Horizontal Directional Drilling (HDD)

For Underground Route Option #1, the Applicant has secured the necessary easements from the private landowners (APNs 0141-030-080 and 0141-010-030). However, the County and SID have all expressed an unwillingness to work with the Applicant on providing the necessary easements and encroachment permits for the proposed gen-tie line and site access due to the existing moratoriums on the development of BESS facilities. Specifically, the County will not provide the necessary encroachment permits to provide site access along Byrnes Road and to allow for a temporary closure of Kilkenny Road during the gen-tie line crossing from the south side of this roadway to the north side of this roadway. The Applicant reached out to the County on July 21, 2024, to inquire about the necessary permits needed to cross this roadway, and the County responded that the issuance of permits is prohibited due to the existing moratorium on BESS development pursuant to Ordinance No. 2024-1853-U-E described above (see Appendix 4.11-B). 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 (approximately 300 feet northwest of the Project site). The Applicant team is continuing attempts to coordinate with SID regarding easement agreements. The City of Vacaville has not yet determined whether they will provide required encroachment permits for the gen-tie based on the City and County BESS moratoriums.

For Underground Route Option #2, the Applicant has secured the necessary easements from the private landowner (APN 0141-030-080). Under this option, the underground portion of the gen-tie line would be located entirely within the Kilkenny Road right-of-way. Therefore, Underground Route Option #2 would not cross under the SID canal and no associated easement would be required. Underground Route Option #2 would still require encroachment permits from the County for site

access along Byrnes Road and for the temporary Kilkenny Road closure, similar to Underground Route Option #1. Underground Route Option #2 would also require HDD work to place the gen-tie line within and below Kilkenny Road, which would run approximately 1,550 feet within the Kilkenny Road right-of-way from east to west. The Kilkenny Road right-of-way transitions from the County to the City just east of this segment; the gen-tie line would only be located within the City's right-of-way. Thus, Underground Route Option #2 would require encroachment permits from both the County and the City for the HDD work and temporary closure of Kilkenny Road, and from the City to permanently place the gen-tie line within the Kilkenny Road right-of-way. As previously discussed, the County has expressed an unwillingness to work with the Applicant to provide the necessary encroachment permits for the proposed gen-tie line and the City has not yet determined their position related to encroachment permit issuance for the gen-tie line.

With either route option, PG&E will coordinate directly with SID for placement of their portion of the gen-tie over the SID canal adjacent to I-80.

Due to the inability of the Project Applicant to secure the necessary easements and encroachment permits from the County, the City, and SID, and potentially the City for Underground Route Option #1, and solely from the County and potentially the City for Underground Route Option #2, the Applicant is seeking local jurisdiction encroachment permit issuance from CEC as necessary to construct the Project.

4.11.3 Environmental Analysis[7]

4.11.3.1 CEQA Impact Analysis

IMPACT 4.11-1: Would the project physically divide an established community? (No Impact)

Typically, the construction of a physical barrier to neighborhood access, or the removal of a means of access, could result in the division of an established community. The Project site is located on a single parcel in a semi-rural area of Solano County, approximately 250 feet southeast of the City of Vacaville jurisdictional boundary, and approximately 5 miles northeast of the city center. There are sporadic residences within the Project vicinity, including a residence located across Kilkenny Road directly to the north of the Project site. Additional rural residences also exist farther north, as well as to the south, east, and west of the Project site separated by agricultural lands. The closest established community to the Project site is the City of Vacaville. As the Project is located on a single parcel with no existing structures or residences, the Project will not physically divide an established community. Furthermore, the proposed gen-tie line will be approximately 1.1-miles-long, portions of which will be installed overhead and underground within acquired easements, on parcels owned by the Applicant, and within PG&E's Vaca-Dixon Substation property north of I-80. The overhead portion of the gen-tie line is sited directly adjacent to an existing PG&E 500-kV transmission line right-of-way, which will avoid creating an additional, isolated high-voltage transmission line corridor between Kilkenny Road and I-80. Siting of the proposed gen-tie line adjacent to existing transmission facilities will also maximize the availability of usable land in the area for other development. Ultimately, the gen-tie line will not include any features that will create a physical barrier to access, nor remove means of access

[7] Appendix B (g) (1)

to, the proximate existing residences. Additionally, the Project will not involve the removal of any existing publicly used means of access. Therefore, the Project will not physically divide an established community.

IMPACT 4.11-2: Would the project cause 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? (Less than Significant Impact)[8]

The Project site and a portion of the gen-tie line are located within unincorporated Solano County, including the initial overhead portion of the gen-tie line within the boundary of the Project site and the initial underground portion south of Kilkenny Road. The overhead portion of the gen-tie line located north of I-80 is also located within unincorporated Solano County. The underground and overhead portions of the gen-tie line between Kilkenny Road and I-80 are located within the City of Vacaville (refer to Figure 4.11-1). The overhead and underground portions of the gen-tie line from the Project substation to the point of change of ownership (POCO) south of I-80, will be designed, sited, and constructed by the Applicant; the overhead portion of the gen-tie, from the POCO to the Vaca-Dixon Substation, will be designed, sited, and constructed by PG&E. The Applicant's portion of the gen-tie line is analyzed herein under the Solano County and City of Vacaville analysis, while the PG&E portion of the gen-tie and its improvements to the Vaca-Dixon Substation are discussed in Section 4.11.3.2.

Solano County Land Use Policy Considerations

As discussed in Section 4.11.2.2, the County enacted a moratorium on the development of BESS facilities via No. 2024-1853-U-E on February 27, 2024. This moratorium was enacted to allow planning staff time to develop land use standards that ensure public safety, health, and welfare. This change in County policy affects the proposed Project and is the primary reason for the Applicant's decision to pursue approval via the CEC's Opt-In Certification Program.

In addition to developing land use policies specific to BESS facilities, another reason for the County's adoption of Ordinance No. 2024-1853-U-E is due to recent fires at BESS facilities both in California and nationwide. The County's ordinance acknowledges that lithium-ion batteries are inherently safe and stable, but certain conditions and older BESS technologies can elevate the risk of fire and thermal runaways. Accordingly, the County seeks to develop standards to implement SB 38, adopted on October 7, 2023, which amends California Public Resources Code Section 761.3 to require BESS facilities in California to establish an emergency response and emergency action plan for the facility and surrounding residents, neighboring properties, emergency responders, and the environment.

Because the Project is a BESS facility, and the County has enacted a moratorium on BESS facilities via Ordinance No. 2024-1853-U-E, the Project will be inconsistent with this County policy. However, the main environmental reason for enacting this ordinance is due to fire safety concerns. As discussed in Section 4.9, *Hazards and Hazardous Materials,* and Section 4.20, *Wildfire,* the Project will be designed and operated in accordance with all applicable fire safety standards and regulations, including Section 1207, *Electrical Energy Storage Systems*, of the California Fire Code, which adopts the National

[8] Appendix B (g) (3) (B)

Fire Protection Association's (NFPA) Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). Refer to Sections 4.9 and 4.20 for additional information on Project design as related to fire safety.

Finally, in accordance with SB 38, the owner or operator of a BESS facility must coordinate with local emergency management agencies, unified program agencies, and local first responders to develop the plan and submit to the County where the facility is located. The Applicant will develop an emergency response and emergency action plan in accordance with SB 38, including the establishment of response procedures for equipment malfunction or failure; the inclusion of procedures established in consultation with local emergency management agencies that provide for the safety of surrounding residents, neighboring properties, and emergency responders; and the establishment of notification and communication procedures between the battery storage facility and local emergency management agencies.

Through proper facility design and compliance with applicable fire safety standards and regulations, including implementation of an emergency response and emergency action plan pursuant to SB 38, the Project will not cause a significant environmental impact because of the conflict with County Ordinance No. 2024-1853-U-E. Impacts will be less than significant.

Consistency with Solano County Zoning Requirements Related to Land Use

Pursuant to Solano County Code Section 28.21.20, "utility facilities or infrastructure, outside of right-of-way" are conditional uses permitted within the A-40 zoning district with a Use Permit. Although the Solano County Code does not contain specific criteria for BESS facilities, the aforementioned use includes BESS facilities, and the general criteria used for other types of use permits are applied. As such, the Project can be considered consistent with the A-40 zoning district.

Consistency with Other Solano County Code Requirements

Table 4.11-3 identifies the various County Code requirements, as well as Project consistency with the requirements.

Table 4.11-3. Consistency with Solano County Code Requirements

Zoning Ordinance Section	Zoning Ordinance Requirement	Project Consistency
Chapter 26.5 - Underground Utilities	Summary: With limited exceptions, utilities must be place underground.	Consistent. Per Section 26.5-14 of the Solano County Code, "poles, overhead wires, and associated overhead structures used for the transmission of electrical energy at nominal voltages in excess of thirty-four thousand five hundred volts" (34.5 kV) are exempt from requirement of this chapter. The proposed gen-tie line will be 230 kV and, therefore, will not require underground installation.
28.21.30 – Lot Area	Every use in an A-40 district shall have a minimum lot area not less than 40 acres.	Consistent; the Project parcel is approximately 40.3 acres, and no subdivision of the Project parcel is proposed.
28.21.30 – Setbacks	The setback requirements in an A district are as follows, subject to the general provisions of Section 28.21.30:	Consistent; the proposed Project exceeds the minimum required depth of the front, rear, and side setbacks.

Zoning Ordinance Section	Zoning Ordinance Requirement	Project Consistency
	A. Depth of front setback: not less than 30 feet; but at least 50 feet from the street centerline. B. Depth of rear setback: not less than 25 feet; C. Width of side setbacks: not less than 20 feet.	
28.21.30 – Height limit	35 feet, and as allowed by Section 28.93, special regulations	Consistent; all onsite Project components will be less than 35 feet in height, with the exception of the gen-tie poles and Project substation riser structure and shield poles, which are exempt per Section 28.93 as discussed below.
28.93 – General Height Regulations and Exceptions	Towers, poles, water tanks and similar structures may be erected to a greater height than the limit established for the district in which they are to be located.	Consistent; the Project will include poles associated with the gen-tie line, which will reach approximately 90 to 115 feet in height. Project substation riser structure and shield poles will reach approximately 65-70 feet in height. All other on-site Project components will be less than 35 feet in height, consistent with the height restrictions of the A district.

Given the analysis provided in Table 4.11-3, the Project will not conflict with other Solano County Municipal Code requirements pertaining to land use.

Consistency with the Solano County General Plan

Land Use Element

The Project is consistent with the applicable Land Use Element goals and policies of the County General Plan, including Goal LU.G-4 and Policies LU.P-7 and LU.P-31. In accordance with these goals and policies, the Project is consistent with the current agricultural zoning and land use designation. The Project will also minimize adverse effects on agriculture as discussed in Section 4.2, *Agriculture and Forestry Resources*. Additionally, the Project will minimize adverse effects on air quality as discussed in Section 4.3, *Air Quality*, energy consumption as discussed in Section 4.6, *Energy*, and other natural resources as discussed throughout this Application.

Agriculture Element

The Project is consistent with the applicable Agriculture Element goals, policies, and implementation programs of the County General Plan, including Goals AR.G-2, AR.G-5, AR.G-6, Policies AG.P-4, AG.P-8, AG.P-9, and Implementation Programs AG.I-1, and AG.I-23. In accordance with the applicable goals of the Agriculture Element, the Project is consistent with the underlying agricultural zoning and land use designation. Additionally, the Project will not result in the permanent loss of agricultural lands, as the site will be restored in accordance with an approved decommissioning plan once the Project's life is over (anticipated to be approximately 30 years). Furthermore, the Project will only use up to 30 acre-feet (AF) of water during construction and approximately 2 AF of water during the first year following installation for temporary irrigation. Required irrigation volumes are expected to be scaled back by 20 to 30 percent each year to allow for complete shutoff of irrigation by year three through five. Thus, the Project will not result in the inefficient use of agricultural water resources.

In accordance with Implementation Program AG.I-1, the Project will compensate the County for the loss of agricultural lands with implementation of Project Design Measure **PD AG-1** as discussed in Section 4.2, *Agriculture and Forestry Resources.* Finally, in accordance with Implementation Program

AG.I-23, there will be adequate water supply to serve Project demand during both construction and temporary irrigation, as discussed in Section 4.19, *Utilities and Service Systems.*

Resources Element

The Project is consistent with the applicable Resources Element goals, policies, and implementation programs of the Solano County General Plan. With regard to energy consumption and renewable energy, the Project is consistent with Goal RS.G-5 and Policies RS.P-52, RS.P-53, RS.P-54, and RS.P-57 of the Resources Element. Specifically, the Project is a BESS facility designed to store energy and support the stabilization of the energy grid. The Project will strengthen the County's energy system and reduce reliance on fossil fuels, as the BESS facility will allow for the storage and use of renewable energy during peak hours of energy usage (i.e., evenings) which are typically when less renewable energy is being generated (i.e., after sunset for solar facilities). Additionally, as discussed in Section 4.6, *Energy*, the Project will not result in the wasteful or inefficient use of energy resources. Finally, regarding Policy RS.P-57 as related to the siting of energy production facilities in a manner that minimizes adverse impacts to wildlife and agricultural resources, the Project is consistent with the current agricultural zoning and will minimize adverse impacts to both wildlife, as discussed in Section 4.4, *Biological Resources*, and agriculture, as discussed in Section 4.2, *Agriculture and Forestry Resources*.

With regard to water supply and water quality, the Project is consistent with Goals RS.G-8 and RS.G-9, Policies RS.P-67, RS.P-71, RS.P-73, and RS.P-76, and Implementation Program RS.I-70 of the Resources Element. Specifically, there is adequate water supply to serve Project demand during both construction and temporary irrigation, as discussed in Section 4.19, *Utilities and Service Systems*. Additionally, the Project will not result in adverse impacts to water quality or groundwater supplies, as discussed in Section 4.10, *Hydrology/Water Quality*. The Project will also include two on-site retention basins that have been designed to contain the volume from a 10-year, 24-hour storm and control flows for up to and including a 100-year, 24-hour storm event, per Solano County standards. These retention basins will support on-site groundwater recharge.

With regard to erosion, the Project is consistent with Goal RS.G-10 and Policy RS.P-71 of the Resources Element. Specifically, the Project will not result in adverse impacts related to erosion as discussed in Section 4.7, *Geology, Soils, and Paleontological Resources*.

With regard to biological resources, including natural habitats, wetlands, and plant and animal species, the Project is consistent with Policies RS.P-1 and RS.P-4 of the Resources Element. Specifically, the Project will result in less than significant impacts to biological resources as discussed in Section 4.4, *Biological Resources*, including impacts to special-status species, wetlands, natural communities, and habitat connections.

With regard to aesthetics and lighting, the Project is consistent with Policies RS.P-6, RS.P-35, RS.P-36, and RS.P-58, and Implementation Programs RS.I-8 and RS.I-22 of the Resources Element. Specifically, the Project will result in less than significant impacts on scenic resources as discussed in Section 4.1, *Aesthetics*. Lighting associated with the Project will also be shielded and directed downwards, and impacts related to light and glare will be less than significant as also discussed in Section 4.1.

Although the Project will be located near existing residences, it will be compatible with surrounding land uses because there is existing transmission infrastructure in the Project vicinity, the Project will include a sound barrier for noise abatement, and the Project is compatible with the existing zoning and land use designation. The Project will also include landscaping along Byrnes Road and Kilkenny Road, which will consist of native species.

With regard to archaeological, historical, and tribal resources, the Project is consistent with Policies RS.P-38 and RS.P-40, and Implementation Program RS.I-25 of the Resources Element. As discussed in Section 4.5, *Cultural Resources,* and Section 4.18, *Tribal Cultural Resources*, a cultural resources survey has been completed for the Project and impacts to cultural and tribal cultural resources will be less than significant. The Project will also implement Project Design Measures **PD CUL-1** through **PD CUL-5**, which require procedures for designation of a cultural resources specialist, assignment of qualified archaeological and Native American monitors, construction monitoring, worker education and training, and inadvertent discoveries. Refer to Section 4.5, *Cultural Resources*, for additional information.

With regard to air quality, the Project is consistent with Implementation Program RS.I-49 of the Resources Element. Specifically, impacts related to emissions from construction equipment will be less than significant as discussed in Section 4.3, *Air Quality*.

With regard to natural resources generally, the Project is consistent with Goal RS.G-2 of the Resources Element. The Project will not result in significant impacts to natural resources as discussed throughout Sections 4.1 through 4.20 of this Application.

Health and Safety Element

The Project is consistent with the applicable Health and Safety Element goals, policies, and implementation programs of the Solano County General Plan. With regard to air quality, the Project is consistent with Goal HS.G-2, Policy HS.P-44, and Implementation Programs HS.I-52, HS.I-54, and HS.I-59 of the Health and Safety Element. As discussed in Section 4.3, *Air Quality*, the Project will result in less than significant impacts related to air quality, including from toxic air contaminants, criteria air pollutants, and odors. Additionally, a Health Risk Assessment was prepared for the Project as further discussed in Section 4.3.

With regard to noise, the Project is consistent with Goal HS.G-3, Policies HS.P-48, HS.P-49, and HS.P-52, and Implementation Programs HS.I-62, HS.I-64, and HS.I-66 of the Health and Safety Element. The Project will include a sound barrier for noise abatement and will include landscaping along the sound barrier to enhance the aesthetic value. Furthermore, both construction and operation of the Project will comply with the County's noise standards, and noise-related impacts will be less than significant as discussed in Section 4.13, *Noise*.

With regard to surface water runoff, stormwater flows, and flood zones, the Project is consistent with Policies HS.P-1, HS.P-3, HS.P-4, HS.P-5, and Implementation Programs HS.I-6, HS.I-9, HS.I-11 of the Health and Safety Element. As previously described, the Project will include two on-site retention basins to capture the increase in runoff and support groundwater recharge. These retention basins have been designed to contain the volume from a 10-year, 24-hour storm and control flows for up to

and including a 100-year, 24-hour storm, per Solano County standards. Additionally, the Project will include drought-tolerant native landscaping along Kilkenny and Byrnes Road, which will support runoff retention. As required by Project Design Measure **PD HYD-2**, the Project will also include development and implementation of a Stormwater Pollution Prevention Plan (SWPPP) to identify possible pollutant sources that could affect the quality of stormwater discharge and to protect water quality in receiving waters. The SWPPP will include site-specific best management practices (BMPs) to minimize impacts related to stormwater runoff. Ultimately, impacts related to stormwater runoff, flooding, and water quality will be less than significant as discussed in Section 4.10, *Hydrology/Water Quality*.

With regard to geologic hazards, the Project is consistent with Policies HS.P-12, HS.P-15, HS.P-17, and Implementation Program HS.I-20 of the Health and Safety Element. As discussed in Section 4.7, *Geology, Soils, and Paleontological Resources*, the Project will result in less than significant impacts related to geologic hazards, including earthquake fault zones and seismic hazards, ground failure, landslides, liquefaction, expansive soils, steep slopes, erosion, subsidence, tsunamis, and seiches. Additionally, a site-specific geotechnical investigation was prepared for the Project and recommendations included in the report will be implemented in Project design.

With regard to fire hazards, the Project is consistent with Policies HS.P-20 and HS.P-23 and Implementation Program HS.I-26 of the Health and Safety Element. The Project is not located in a high or very high wildfire hazard severity zone. However, the Project Applicant will work with local fire districts to ensure effective firefighting and to incorporate fire-safe designs and procedures, including the development of an emergency response and emergency action plan pursuant to SB 38 and as required by Project Design Measures **PD HYD-04** and **PD HYD-05**. Ultimately, impacts related to fire risk and wildfire hazards will be less than significant as discussed in Section 4.9, *Hazards and Hazardous Materials*, and Section 4.20, *Wildfire*. Refer to Section 4.9 for additional information on the Project's design as related to fire safety.

With regard to hazardous materials, the Project is consistent with Policy HS.P-26 and Implementation Program HS.I-32 of the Health and Safety Element. Specifically, the Project will result in less than significant impacts related to the transporting, storing, and use of hazardous materials as discussed in Section 4.9, *Hazards and Hazardous Materials*. Additionally, the Project will conduct soil sampling and develop a Soil Management Plan, as appropriate per Project Design Measure **PD HAZ-03**, to manage potential residual agricultural chemicals.

With regard to hazardous waste management, the Project is consistent with Policy HS.P-29 of the Health and Safety Element. As discussed in Section 4.19, *Utilities and Service Systems*, the Project will result in less than significant impacts related to solid waste, including hazardous waste.

With regard to greenhouse gas (GHG) emissions, the Project is consistent with Policy HS.P-47 of the Health and Safety Element. Specifically, the Project will install a BESS, which will support the reliability of the energy grid, including from renewable energy sources. The Project may secondarily reduce GHG emissions from other energy sources by allowing for the storage and discharge of renewable energy during times of nonproduction (i.e., after sunset for solar facilities). Although the Project will be developed on agricultural land, the Project is consistent with the current zoning and

the site will be restored when the Project's life is over (anticipated to be approximately 30 years). Finally, the Project will result in less than significant impacts related to GHG emissions, as discussed in Section 4.8, *Greenhouse Gas Emissions*.

Finally, Goal HS.G-1 of the Health and Safety Element generally aims to minimize the potential for loss of life and property resulting from natural or human-caused hazards. As described above and discussed in greater detail throughout Sections 4.1 through 4.20 of this Application, the Project will minimize adverse impacts from both natural and human-caused hazards, consistent with this goal.

Transportation Element

The Project is consistent with the applicable Transportation Element policies and implementation programs of the County General Plan, including Policies TC.P-4 and TC.P-5, and Implementation Program TC.I-2. In accordance with the applicable policies and implementation program of the County's General Plan, the Project has evaluated potential impacts on the transportation system and impacts related to transportation will be less than significant as discussed in Section 4.17, *Transportation*.

Public Facilities Element

The Project is consistent with the applicable Public Facilities Element goals, policies, and implementation programs of the Solano County General Plan. With regard to fire and police protection and emergency response, the Project is consistent with Goals PF.G-1 and PF.G-3, Policies PF.P-2, PF.P-5, PF.P-39, and PF.P-41, and Implementation Programs PF.I-4, PF.I-35, and PF.I-42 of the Public Facilities Element. As related to locating new development to maximize the use of existing facilities and services, the Project site is located approximately 0.65 mile from the Vaca-Dixon Substation, which reduces the length of transmission infrastructure required to interconnect the Project with the energy grid. The Project site is also located in a semi-rural area that is relatively proximate to existing fire and police protection services. Additionally, the Project will pay all required development fees as related to public services and facilities and impacts to public services will be less than significant as discussed in Section 4.15, *Public Service*s. Finally, the project will incorporate fire protection and emergency response measures and will coordinate with local fire districts as further discussed in Section 4.9, *Hazards and Hazardous Materials*, and impacts related to fire hazards will be less than significant.

With regard to water supply, the Project is consistent with Policies PF.P-10, PF.P-14, and PF.P-20, and Implementation Programs PF.I-11, PF.I-12, PF.I-13, and PF.I-14 of the Public Facilities Element. As described above, there is adequate water supply to support Project water demand during both construction and temporary irrigation, and impacts related to water supply will be less than significant as discussed in Section 4.19, *Utilities and Service Systems*. Additionally, the Project will require a relatively low amount of water as compared with the existing agricultural land use.

With regard to waste management, the Project is consistent with Policy PF.P-27. As described above, the Project will result in a less than significant impact related to solid waste generation as discussed in Section 4.19, *Utilities and Service Systems*.

With regard to stormwater runoff, the Project is consistent with Policies PF.P-33 and PF.P-34, and Implementation Program PF.I-32 of the Public Facilities Element. As described above, the Project will develop and implement a SWPPP as required by Project Design Measure **PD HYD-02** and will include two on-site retention basins to manage stormwater runoff during construction and operations, respectively. Inclusion of the retention basins will also support groundwater recharge. Impacts related to stormwater runoff will be less than significant as discussed in Section 4.10, *Hydrology/Water Quality*.

With regard to transmission lines, the Project is consistent with Policies PF.P-49 and PF.P-50 and Implementation Program PF.I-54. In accordance with Policy PF.P-49 and Implementation Program PF.I-54, the Project will use parallel and existing rights-of-way for the proposed gen-tie line, including Kilkenny Road. The gen-tie line will not result in adverse impacts to human populations and natural areas. Additionally, in accordance with Policy PF.P-50, the gen-tie line is sited in a manner that will minimize disruption of natural vegetation and agricultural activities as discussed in Section 4.4, *Biological Resources*, and Section 4.2, *Agriculture and Forestry Resources*, respectively. The gen-tie line is also sited in a manner that avoids impacts to scenic resources as discussed in Section 4.1, *Aesthetics*.

Summary

As discussed throughout the preceding subsections, the Project will be consistent with all relevant goals, policies, and implementation programs of all elements of the County General Plan. Therefore, the Project will not cause a significant environmental impact due to a conflict with the County General Plan. Impacts will be less than significant.

City of Vacaville Land Use Policy Considerations

As discussed in Section 4.11.2.3, the City enacted a moratorium on BESS facilities on June 25, 2024, mirroring that of the County. Although the Project would include development of a BESS facility, only a portion of the gen-tie line would be located within the City's jurisdiction, and the moratorium does not prohibit the development of transmission lines. Accordingly, development of the portion of the gen-tie line located within the City's jurisdiction will not conflict with the existing moratorium on BESS facilities.

Consistency with City of Vacaville Zoning Requirements Related to Land Use

As discussed in Section 4.11.2.3 above, Chapter 14.02.060 of the City's Municipal Code contains the City's Use Classifications. Transmission lines or similar types of linear facilities are not included as a specific use within the City's Municipal Code. Additionally, the City's Municipal Code does not contain an exception allowing for the installation of transmission lines in any zoning district, similar to the County's Zoning Ordinance as described above. However, there are multiple instances of existing high-voltage transmission lines in the city of Vacaville that cross a variety of zoning districts, including residential. Electrical transmission and distribution lines, as well as other linear utilities, are an integral part of any type of development and do not appear to be specially addressed within the City's Municipal Code. Based on preliminary consultation with the City (Morris 2024), the City's Municipal Code does not address transmission line siting or other public utilities due to the infrequent need to

address new linear utilities as independent approvals. Therefore, high-voltage transmission lines such as the proposed gen-tie line do not appear to be considered development in kind with uses regulated by the zoning ordinance. Accordingly, the Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, will not result in a significant environmental impact due to a conflict with the City's Zoning Ordinance.

Consistency with Other City of Vacaville Municipal Code Requirements

Chapter 13.16 of the City's Municipal Code contains the City's regulations for Underground Utility Districts. According to Section 13.16.070, "poles, overhead wires, and associated overhead structures used for the transmission of electric energy at nominal voltages in excess of thirty-four thousand five hundred volts" are exempt from the provisions of this chapter. Accordingly, the proposed gen-tie line, and specifically the portion located within the City's jurisdiction, will be consistent with this chapter.

Consistency with the City of Vacaville General Plan

Land Use Element

The Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, is consistent with the applicable Land Use Element goals and policies of the City General Plan. With regard to agriculture, the Project is consistent with Goal LU-2 and Policy LU-P2.4 of the Land Use Element. Although the gen-tie line is located in areas identified as Prime Farmland and Unique Farmland, and this policy requires the purchase of conservation easements to protect agricultural lands for development that occurs in these areas, construction and operation of the proposed gen-tie line alone is not considered development in kind with uses regulated by the City's zoning ordinance. As previously described, transmission lines or similar types of linear facilities are not included as a specific use within the City's Municipal Code. Additionally, there are no use classifications defined in the City's Municipal Code that would be substantially similar to the development of a gen-tie transmission line. There are also multiple instances of existing high-voltage transmission lines in the City of Vacaville that are not located within separately delineated zoning districts, and some cross through residential zoning districts. Based on preliminary consultation with the City (Morris 2024), the City's Municipal Code does not address transmission line siting or other public utilities due to the infrequent need to address new linear utilities as independent approvals. Accordingly, high-voltage transmission lines such as the proposed gen-tie line do not appear to be considered development in kind with uses regulated by the zoning ordinance. Therefore, the portion of the gen-tie line located within the City's jurisdiction would not be considered development for the purpose of Policy LU-P2.4 and would not require the purchase of agricultural conservation easements. Thus, the Project will be consistent with this policy. However, it should be noted that the Project will purchase conservation easements for development of the Project site, as discussed in Section 4.2, *Agriculture and Forestry Resources.*

With regard to pollution and health risks, the Project is consistent with Goal LU-11 of the Land Use Element. Specifically, a Health Risk Assessment was prepared for the Project (Appendix 4.3-A) and health risks are assessed in Section 4.3, *Air Quality*. As discussed therein, impacts related to air quality and public health will be less than significant.

With regard to the goals and policies specific to the Northeast Growth Area, the Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, will be consistent with Goal LU-20 and Policies LU-P20.1, LU-P20.3, LU-P20.4, LU-P20.5, LU-P20.6, and LU.P21.7. The vision for the Northeast Growth Area is to develop job generating uses and residential development in an orderly, well-planned and balanced manner. Development pursuant to the land uses of the Northeast Growth Area (i.e. business park, residential, technology park, etc.) has yet to occur, and this area is still primarily active and fallow agricultural land. While the gen-tie line is not considered a development in kind with uses regulated by the City's zoning ordinance as previously discussed, the gen-tie line will be located on parcels owned by the Project Applicant that are zoned High Density Residential and Business Park, which would preclude those uses from being developed within the gen-tie corridor. However, the gen-tie line will also be located adjacent to another existing transmission line to the west, which would be considered orderly in that transmission facilities in this area will be clustered. Additionally, because the gen-tie line is not a development in kind with the uses regulated in the City's zoning ordinance, a specific plan is not required. Therefore, while construction and operation of the portion of the gen-tie line within the City's jurisdiction was not anticipated for the Northeast Growth Area, it will be sited in a manner that is consistent with the other existing transmission infrastructure to the west, and a majority of the Northeast Growth Area will still be available for future urban growth as desired by the City.

With regard to airport land use compatibility, the Project is consistent with Goal LU-29 and Policy LU-P29.3 of the Land Use Element. As discussed below under the consistency analysis for the Travis AFB LUCP, the Project will not conflict with this plan. The Project is also not located within the Nut Tree AIA. Refer to Section 4.9, *Hazards and Hazardous Materials*, for additional information.

Transportation Element

The Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, is consistent with the applicable Transportation Element goals and policies of the City General Plan. Specifically, with regard to vehicle miles traveled (VMT), the Project is consistent with Goal TR-3 and Policy TR-P3.3 of the Transportation Element. Project-generated VMT was analyzed in Section 4.17, *Transportation*, and VMT-related impacts will be less than significant.

With regard to improvements to the transportation system, the Project is consistent with Goal TR-6 and Policies TR-P6.1, TR-P6.2, and TR-P6.5 of the Transportation Element. Development of the portion of the gen-tie line within the City will not induce growth that could increase trip long-term generation along Kilkenny Road. The Project is not proposed to serve new urban development in the area, but rather to support the County's energy system more generally. Construction of the gen-tie line will induce temporary vehicle trips, and a temporary road closure will be required during construction to allow for placement of the gen-tie line either across or within the Kilkenny Road right-of-way (see Section 4.11.2.4 above for a description of Underground Route Option #1 and Underground Route Option #2). However, once the Project is operational, traffic along Kilkenny Road will be similar to existing conditions. Development of the Project will also not preclude the future expansion of Kilkenny Road, and this roadway will be able to accommodate trips generated by the Project.

Ultimately, impacts to the transportation system will be less than significant as determined in Section 4.17, *Transportation*.

With regard to air quality, the Project is consistent with Goal TR-12 and Policies TR-P12.1 and TR-P12.2 of the Transportation Element. Specifically, construction vehicles will not idle for more than 5 minutes, and equipment will be parked within the gen-tie laydown area overnight and not on any roadways. Overall, air quality impacts, including from construction vehicles, will be less than significant as discussed in Section 4.3, *Air Quality*.

Conservation and Open Space Element

The Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, is consistent with the applicable Conservation and Open Space Element goals and policies of the City General Plan. With regard to biological resources, the Project is consistent with Goal COS-1 and Policies COS-P1.5, COS-P1.6, COS-P1.7, COS-P1.9, COS-P1.10, COS-P1.12, and COS-P1.13 of the Conservation and Open Space Element. Specifically, a Biological Resources Technical Report has been prepared for the Project (Appendix 4.4-A), and as discussed in Section 4.4, *Biological Resources*, impacts to biological resources from construction of the gen-tie line, including sensitive species and habitats, wetlands, and native vegetation, will be less than significant with incorporation of Project Design Measures **PD BIO-1** through **PD BIO-6**.

With regard to cultural resources and paleontological resources, the Project is consistent with Goal COS-6 and Policies COS-P6.2, COS-P6.4, COS-P6.5, and COS-P6.6 of the Conservation and Open Space Element. As discussed in Section 4.5, *Cultural Resources*, and Section 4.18, *Tribal Cultural Resources*, a cultural resources survey has been completed for the Project and impacts to cultural and tribal cultural resources will be less than significant. The Project will also implement Project Design Measures **PD CUL-1** through **PD CUL-5**, which require procedures for designation of a cultural resources specialist, assignment of qualified archaeological and Native American monitors, construction monitoring, worker education and training, and inadvertent discoveries. Refer to Section 4.5, *Cultural Resources*, for additional information. Additionally, as discussed in Section 4.7, *Geology, Soils, and Paleontological Resources*, a paleontological resource assessment was prepared for the Project and impacts to paleontological resources will be less than significant. The Project will also implement Project Design Measures **PD GEO-1** through **PD GEO-3**, which require implementation of a paleontological resources mitigation and monitoring plan, worker education and training , and paleontological monitoring. Refer to Section 4.7, *Geology, Soils, and Paleontological Resources*, for additional information.

With regard to aesthetics, the Project is consistent with Goal COS-8 and Policy COS-8.1 of the Conservation and Open Space Element. As discussed in Section 4.1, *Aesthetics*, the Project, including the gen-tie line, will result in less than significant impacts related to aesthetics.

With regard to energy supply, the Project is consistent with Goal COS-10 and Policy COS-P10.1 of the Conservation and Open Space Element. The Project will include a BESS facility designed to store energy and support the stabilization of the energy grid. The Project will strengthen the County's energy system and reduce reliance on fossil fuels, as the BESS facility will allow for the storage and

use of renewable energy during peak hours of energy usage (i.e., evenings) which are typically when less renewable energy is being generated (i.e., after sunset for solar facilities). Additionally, as discussed in Section 4.6, *Energy*, the Project will not result in the wasteful or inefficient use of energy resources.

With regard to air quality, the Project is consistent with Goal COS-12 and Policies COS-P12.3, COS-P12.5, and COS-P12.6 of the Conservation and Open Space Element. As discussed in Section 4.3, *Air Quality*, the Project will result in less than significant impacts related to air quality.

With regard to water supply and conservation, the Project is consistent with Goal COS-13 and Policy COS-P13.4 of the Conservation and Open Space Element. As previously described, there is adequate water supply to support Project water demand during both construction and temporary irrigation, and impacts related to water supply will be less than significant as discussed in Section 4.19, *Utilities and Service Systems*. Construction of the gen-tie line will require a relatively low amount of water as compared with the existing agricultural land use and would require no water during operation.

With regard to water quality, groundwater resources, and erosion, the Project is consistent with Goal COS-14 and Policy COS-P14.5 of the Conservation and Open Space Element. As previously described, the Project would develop and implement a SWPPP for construction stormwater management as required by Project Design Measure **PD HYD-02**, which will include BMPs to minimize impacts related to stormwater runoff. The SWPPP will apply to construction of the gen-tie line as well. Impacts related to water quality and groundwater resources will be less than significant as discussed in Section 4.10, *Hydrology/Water Quality*. Impacts related to erosion will be less than significant as discussed in Section 4.7, *Geology, Soils, and Paleontological Resources*.

Public Services and Facilities Element

The Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, is consistent with the applicable Public Services and Facilities Element goals and policies of the City General Plan. With regard to fire and police protection and emergency response, the Project is consistent with Goal PUB-1 and Goal PUB-2, and Policy PUB-P2.4 of the Public Services and Facilities Element. Impacts to public services will be less than significant as discussed in Section 4.15, *Public Services*.

With regard to fire hazards, the Project is consistent with Policy PUB-P1.4 of the Public Services and Facilities Element. Fire hazards are discussed in Section 4.9, *Hazards and Hazardous Materials*, and Section 4.20, *Wildfire*, and impacts related to fire risk and wildfire hazards will be less than significant. The Project Applicant will work with local fire districts to ensure effective firefighting and to incorporate fire-safe designs and procedures, including the development of an emergency response and emergency action plan pursuant to SB 38 and as required by Project Design Measures **PD HYD-04** and **PD HYD-05**.

With regard to solid waste generation, the Project is consistent with Goal PUB-9 and Policy PUB-P9.9 of the Public Services and Facilities Element. As described above, the Project will result in a less than significant impact related to solid waste generation as discussed in Section 4.19, *Utilities and Service Systems*.

With regard to water supply, the Project is consistent with Goal PUB-10 and Policy PUB-P10.2 of the Public Services and Facilities Element. As previously described, there is adequate water supply to support Project water demand during both construction and temporary irrigation, and impacts related to water supply will be less than significant as discussed in Section 4.19, *Utilities and Service Systems*. Construction of the gen-tie line will require a relatively low amount of water as compared with the existing agricultural land use and would require no water during operation.

Safety Element

The Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, is consistent with the applicable Safety Element goals and policies of the City General Plan. With regard to geologic hazards, the Project is consistent with Goal SAF-1 and Policies SAF-P1.4, SAF-P1.6, and SAF-P1.7 of the Safey Element. As discussed in Section 4.7, *Geology, Soils, and Paleontological Resources*, the Project will result in less than significant impacts related to geologic hazards, including earthquake fault zones and seismic hazards, ground failure, landslides, liquefaction, expansive soils, steep slopes, erosion, subsidence, tsunamis, and seiches. Additionally, a site-specific geotechnical investigation was prepared for the Project and recommendations included in the report will be implemented in Project design.

With regard to stormwater drainage and flooding, the Project is consistent with Goals SAF-2 and Policies SAF-P2.4 and SAF-P2.5 of the Safety Element. As previously described and required by Project Design Measure **PD HYD-02**, the Project will develop and implement a SWPPP with associated best management practices during Project construction, and the Project design includes operational stormwater management facilities. Additionally, all areas within the Project BESS array, Project substation, and access roads will be gravel-surfaced and temporary disturbance areas including construction laydown areas, gen-tie corridor, and stormwater retention basins will be reseeded with native grasses for erosion control. Stormwater drainage impacts will be less than significant as discussed in Section 4.10, *Hydrology/Water Quality*. Impacts related to flood hazards will also be less than significant as discussed in Section 4.10.

With regard to wildfire hazards, the Project is consistent with Goal SAF-5 and Policies SAF-P5.2, SAF-P5.4, and SAF-P5.7 of the Safety Element. The Project, including the gen-tie line, is not located in a high or very high wildfire hazard severity zone. As previously described, the Project Applicant will work with local fire districts to ensure effective firefighting and to incorporate fire-safe designs and procedures, including the development of an emergency response and emergency action plan pursuant to SB 38 and as required by Project Design Measures **PD HYD-04** and **PD HYD-05**. The Project will also comply with all applicable provisions of the California Fire Code, including transmission vegetation management requirements for the gen-tie line. Ultimately, impacts related to fire risk and wildfire hazards will be less than significant as discussed in Section 4.9, *Hazards and Hazardous Materials*, and Section 4.20, *Wildfire*. Refer to Section 4.9 for additional information on the Project's design as related to fire safety.

With regard to hazardous materials and hazardous waste, the Project is consistent with Goal SAF-6 and Policy SAF-P6.6 of the Safety Element. As previously described, impacts related to the transportation, handling, use, and storage of hazardous materials will be less than significant as

discussed in Section 4.9, *Hazards and Hazardous Materials*. Additionally, impacts related to the disposal of hazardous waste will be less than significant as discussed in Section 4.19, *Utilities and Service Systems*.

With regard to climate change, the Project is consistent with Goal SAF-8 and Policy SAF-P8.7 of the Safety Element. As previously described, the Project will install a BESS, which will support the reliability of the energy grid, including from renewable energy sources. The Project may secondarily reduce GHG emissions from other energy sources by allowing for the storage and discharge of renewable energy during times of nonproduction (i.e., after sunset for solar facilities).

Noise Element

The Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, is consistent with the applicable Noise Element goals and policies of the City General Plan. Specifically, the Project will be consistent with Goal NOI-1and Policies NOI- NOI-P4.1 and NOI-P4.2. Both an Ambient Noise Study (Appendix 4.13-A) and a Sound Assessment Study (Appendix 4.13-B) were prepared for the Project. As discussed in Section 4.13, *Noise*, construction and operation of the Project, including the gen-tie line, will result in less than significant noise impacts.

Summary

As discussed throughout the preceding subsections, the Project will be consistent with all relevant goals, policies, and implementation programs of all elements of the City General Plan. Therefore, the Project will not cause a significant environmental impact due to a conflict with the City General Plan. Impacts will be less than significant.

Solano County Multi-Species Habitat Conservation Plan

As discussed in Section 4.4, *Biological Resources*, the Solano Multi-Species Habitat Conservation Plan (Solano County Water Agency 2012) establishes a framework for complying with federal and state regulations for endangered species while accommodating future urban growth, development of infrastructure, and ongoing operations and maintenance activities associated with flood control, irrigation facilities, and other public infrastructure undertaken by or under the permitting authority/control of the Habitat Conservation Plan participants within the plan area. Plan participants include various municipalities, and irrigation, water, sanitation, and reclamation districts. The Applicant and unincorporated areas of Solano County are not plan participants and are not covered under the Habitat Conservation Plan. The plan area encompasses approximately 577,000 acres of Solano County and approximately 8,000 acres of Yolo County. Covered activities under the Habitat Conservation Plan are associated with urban development, ongoing operations, maintenance, and new construction of plan participant facilities, and management, enhancement, habitat restoration/construction, monitoring, and relocation of covered species. The Project site is located in a Covered Activity Zone that only allows ongoing operation, maintenance, and construction of irrigation and flood control facilities. Therefore, in addition to the Applicant not being a plan participant, the Project would also not be considered a covered activity under the Solano Multi-Species Habitat Conservation Plan. However, with implementation of Project Design Measures **PD BIO-1** through **PD BIO-7**, the Project will not result in a significant environmental impact due to

conflict with this plan, and impacts will be less than significant. Refer to Section 4.4, *Biological Resources*, for additional information.

Consistency with the Travis Air Force Base Land Use Compatibility Plan

The Travis AFB LUCP regulates land use and safety hazards within the Travis AFB AIA. As discussed in Section 4.9, *Hazards and Hazardous Materials*, the Project site and gen-tie corridor are located approximately 7.25 miles north of Travis AFB and are within Zone D of the Travis AFB LUCP. According to Table 1 of the Travis AFB LUCP (Solano County 2024b), the only prohibited uses are Hazards to Flight, which includes physical (e.g., tall objects), visual, and electronic forms of interference with the safety of aircraft operations. Limitations on the height of structures and notice of aircraft overflights are the only compatibility factors within this zone. Airport Land Use Commission review is also required for objects in Zone D if they are greater than 200 feet above ground level. There are no particular safety requirements for Zone D (Solano County 2024b). The Project will not include any structures taller than 200 feet and therefore does not require ALUC review. Since the Project will not produce glare, will not attract birds, and will not otherwise interfere with the safety of aircraft operation, it will not conflict with the Travis AFB LUCP. The Applicant has also submitted an Informal Review Request to the Department of Defense Siting Clearinghouse to confirm that the Project will not interfere with operations at Travis AFB (Appendix 4.11-C). Accordingly, the Project will not result in a significant environmental impact due to conflict with this plan and impacts will be less than significant.

Impact 4.11-2 Determination

As discussed throughout the preceding subsections, the Project will not 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. Although the Project is not consistent with Solano County Ordinance No. 2024-1853-U-E, this inconsistency will not result in a significant environmental effect for the reasons discussed above. Overall, the Project is consistent with most relevant plans, policies, and regulations, and even with the inconsistency noted above, this would not cause any significant environmental impacts. Therefore, impacts will be less than significant.

4.11.3.2 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kV gen-tie line from the POCO to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of I-80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

Development of PG&E's portion of the gen-tie line from the POCO to the Vaca-Dixon Substation will not divide an established community or interfere with any land use plan, policy, or regulation. The above policy consistency analysis in Section 4.11.3.1 for development of the Project will also support

PG&E's development of its portion of the gen-tie cable. PG&E's portion of the gen-tie line would be primarily located within the unincorporated Solano County, aside from the POCO structure just south of I-80, which would be within the City's jurisdiction. Development of PG&E's portion of the gen-tie line would be consistent with all relevant plans, policies, and regulations adopted for the purpose of mitigating an environmental effect. Consistent with the above analysis provided for the portion of the gen-tie line located within the City's jurisdiction, and based on preliminary consultation with the City (Morris 2024), the City's Municipal Code does not address transmission line siting or other linear public utilities due to the infrequent need to address new linear utilities as independent approvals. Accordingly, the POCO structure is not considered a development in kind with the uses regulated in the City's zoning ordinance and would not result in a significant environmental impact due to a conflict with the City's Zoning Ordinance.

Therefore, PG&E's development of its portion of the gen-tie line will result in less than significant impacts per significance criteria described for Impacts 4.11-1 and 4.11-2. No mitigation will be required.

4.11.4 Cumulative Effects[9]

The cumulative projects list, provided in Table 4.11-4, *Cumulative Impacts Project List*, was developed by reviewing publicly available lists of active projects (under review, approved, and under construction). Due to close the proximity of the Project site to the cities of Vacaville City of Dixon, the study area for cumulative effects was determined to be both cities and unincorporated Solano County. Tetra Tech reached out to both Solano County and the City of Vacaville for input on the cumulative projects to include in this analysis. The City of Vacaville provided a link to the City's Development Activity website, which was reviewed to develop the cumulative projects list. Solano County did not respond to multiple requests for input. However, the County's Environmental Documents website was reviewed, as well as the County Planning Commission's meeting minutes from all 2024 meetings. The City of Dixon's Environmental Review Documents website was also reviewed for relevant cumulative projects. Based on a review of publicly available resources for active projects within Solano County, the City of Vacaville, and the City of Dixon, 135 cumulative projects were identified within the study area that were under review, approved, or under construction (expired and withdrawn projects were not evaluated). Cumulative projects within the study area are described in Table 4.11-4.

Cumulative land use and planning impacts may occur when project-specific impacts evaluated in an EIR are combined with the effects of other projects which, when examined individually, may not be considered to be significant. Specifically, cumulative impacts related to land use and planning could occur if multiple projects would together divide an established community. However, all cumulative projects would be required to separately undergo environmental review on a case-by-case basis in accordance with the requirements of CEQA. Each cumulative project would also be required to demonstrate consistency with all applicable planning documents and regulations, and implement mitigation for any significant environmental effects caused by a conflict with applicable land use plans, policies, and regulations. Because the Project will not have a significant impact on land use and

[9] Appendix B (g) (1)

planning and because conflicts with land use plans, policies, or regulations are Project specific, the Project will not cause a cumulative impact. If incompatibilities or land use conflicts are identified for any of the cumulative projects, the County would require mitigation to avoid or minimize this type of land use impact. Therefore, no cumulatively considerable land use and planning impacts would occur. No mitigation will be required.

Table 4.11-4. Cumulative Impacts Project List

Cumulative Project	File No.	Location	Status	Distance from Project	Description
Solano County					
Middle Green Valley Specific Plan	-	North of the Fairfield City limits along Green Valley Road	Under Review	17 miles (mi)	The plan area includes grazing lands in the hills, a mixture of cultivated and cultivable agricultural land on the valley floor (substantial portions of which have recently not been in cultivation), over 200 acres of vineyard, and a number of existing building and infrastructure elements including approximately 55 rural residential units, a 10,000-square-foot winery (VG Cellars), three livestock feed barns, numerous additional agricultural barns, sheds and other accessory structures, approximately 20 miles of fencing, approximately 6 miles of overhead power and communications lines, three stock ponds, and a Solano County Water Agency operated reservoir
Double T Ranch Quail Canyon	-	8325 Quail Canyon	Under Review	9 mi	The project includes the construction of a public stable without horse shows that would provide long-term boarding care for up to 48 horses.
Lantos Energy LLC – Marsalla 1	-	North of Birds Landing Road and approximately one-half mile north of Montezuma Slough	Under Review	18 mi	The project includes the construction of a drill site and to drill one (1) exploratory natural gas well from the proposed drill site over a one (1) year period.
City of Vacaville					
Weber Road Construction Yard	23-020	North of Weber Road, South of I-80 APN: 0109-270-050; 0109-220-060	Under Construction	0.5 mi	The project would establish a temporary construction and materials yard with space for up to six tenants.
Clear Channel Outdoor Digital Billboard Conversion	23-027	South of I-80, north of Kilkenny Road APN: 0133-060-060	Under Review	0.8 mi	Request to convert one existing static billboard into a new digital billboard. The sign would have a maximum height of 45 ft. and would contain a digital display area of 648 sq. ft.
Nut Tree Business Park	16-073 21-198 23-154	Nut Tree Road N. of Nut Tree Village	Plan Check	3 mi	Request for Time Extension to extend approvals of a two-building industrial business park
Midway Commerce Center	20-139 21-239	W. of Eubanks Drive, at the intersection of Eubanks Drive and Chancellor Court	Approved	3 mi	Request to construct three new industrial buildings: Building A at 198,126 sq. ft., Building B at 104,237 sq. ft., and Building C at 1,228,982 sq. ft. Buildings A and C have already been constructed.
Conco Warehouse	20-334	E. of Eubanks Drive, at the intersection of Eubanks Drive and Chancellor Court	Under Construction	3 mi	Request to construct a 415,808 sq. ft. warehouse building with approximately 6,000 sq. ft. of office space, 421 parking spaces, and 120 truck spaces.

Cumulative Project	File No.	Location	Status	Distance from Project	Description
Vaca Valley Warehouse Building	21-057	Cessna Drive, W. of Aviator Drive	Under Construction	3 mi	Request to construct two warehouse buildings: one 257,512 sq. ft. and the other 169,875 sq. ft.
Granite Expo Warehouse	22-179	916 Cotting Lane	Approved	2 mi	Request to construct a new 70,514 sq. ft. warehouse and wholehouse retail facility.
Valley Strong Credit Union	22-287	N. of Nut Tree Road W. of Denny's	Plan Check	3 mi	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.
Transwestern Ventures Campus	22-381	End of Horse Creek Drive	Plan Check	2 mi	Request to construct three new industrial buildings: Building 1 at approximately 123,000 sq. ft; Building 2 at approximately 127,000 sq. ft.; and Building 3 at approximately 123,000 sq. ft.
Midway Plaza	23-078	South of Midway Road, West of I-505	Under Review	3 mi	Request to construct a new 4,700 sq. ft. service station and convenience store, a 4,900 sq. ft. vehicle repair/maintenance building, a 3,000 sq. ft. drive-through restaurant, and a 1,900 sq. ft. drive-through restaurant.
All Weather Architectural Aluminum Expansion	24-005	777 Aldridge Road	Under Review	3 mi	Request to construct an 89,100 sq. ft. addition to the existing facility.
Beyond Market & Happy's Car Wash	24-010	S. of East Monte Vista Avenue E. of Nut Tree Road	Incomplete	3 mi	Request to construct an approximately 12,300 sq. ft. commercial center consisting of a 5,250 sq. ft. drive through convenience store, a 2,414 sq. ft. commercial building, a 12-stall service station for electric and hydrogen cell vehicles, and a 4,637 sq. ft. car wash.
Jepson Center	19-347 24-008	611 Leisure Town Road	Under Construction	3 mi	Request to establish a drive-through facility within the under construction commercial center. The original request was to construct a 2,751 sq. ft. gas station, a car wash, and an 11.567 sq. ft. commercial building with 71parking spaces.
Kairos Charter School	21-238 23-151 24-013	Between Sunflower Street and Carroll Way	Under Review	3 mi	Request to modify the revise the master plan layout for the approved Kairos Public Charter School Campus to introduce a new interim 4,320 sq. ft. modular building for approximately 100 high school students.
Elmira Road Industrial Building	21-316	777 Elmira Road	Approved	3 mi	Request to construct a 26,180 sq. ft. industrial building with 11 bay doors, 25 parking spaces, and perimeter landscaping.
Elmira Road Monopine	23-070	777 Elmira Road	Under Construction	3 mi	Request to construct an 85 ft. tall telecommunications tower that architecturally imitates a pine tree.
Union Way Building Antenna	23-116	29 Union Way	Approved	3 mi	Request to establish a new telecommunication facility on the rooftop of an existing industrial building.
Elizabeth Street Mixed-Use	19-319 22-169	413 Elizabeth Street	Plan Check	5 mi	Request to (1) construct a new two-story mixed-use building with a new 484 sq. ft. commercial space on the first floor and a 540 sq. ft. one-bedroom apartment on the second floor, (2) construct a new 930 sq. ft. two-bedroom apartment, and (3) convert an existing 722 sq. ft. garage to a two-bedroom apartment.

Cumulative Project	File No.	Location	Status	Distance from Project	Description
Hampton Inn & Suites	20-130	1000 Mason Street	Approved Expires 06-21-2024	5 mi	Request to construct a five-story, 108-room hotel.
700 PARC on Main (Site One)	22-057	S. of East Main Street E. of Wilson Street	Plan Check	5 mi	Request to construct 4,000 sq. ft. of commercial space, along with 25 condominium units
Always Best Care Senior Services	23-048	518 Davis Street	Approved	5 mi	Request to remodel/reconstruct an existing residential structure to accommodate a commercial business
Alamo Mixed-Use Project	19-035	Alamo Drive N. of Raleigh Drive	Approved	5 mi	Request to construct a 6,500 sq. ft. single-story commercial building, 73 townhomes, and a 3.15-acre detention basin.
Fairmont Square Plaza	21-003	521 Peabody Road	Approved	5 mi	Request to construct an approximately 2,500 sq. ft. drive through restaurant and renovate an existing 7,953 sq. ft. commercial building.
Chipotlane	22-425	851 Davis Street	Under Construction	5 mi	Request to construct an approximately 2,325 sq. ft. drive-through restaurant.
Lagoon Valley Self-Storage	18-263	5920 Cherry Glen Road	Under Construction	7 mi	Request to construct 10 storage buildings with a 1,136 sq. ft. office building and a 1,900 sq. ft. live-in manager's unit.
Ascend @ Lagoon Valley	21-144	Lagoon Valley Road, E. of I-80	Approved	7 mi	Request to relocate various planned office buildings, increase the maximum floor plate area from 35,000 sq. ft. to 100,000 sq. ft. for manufacturing and manufacturing support buildings, increase the maximum building height from 57 ft. to 62 ft., decrease parking standards for Research and Development uses and Manufacturing uses, increase single-family residential from 176 to 202 units, decrease multifamily townhomes from 51 units to 25 units, and relocate the planned Golf Clubhouse with revised programming,
Bella Vista Storage Addition	21-419 24-016	226 Bella Vista Road	Under Review	5 mi	Time Extension request to extend the approval of a 6,294 sq. ft. single-story enclosed storage building within an existing self-storage facility for two years.
Lagoon Valley Guardhouse	23-016	Lagoon Valley Road, E. of I-80	Approved	7 mi	Request to construct a 249 sq. ft. guardhouse to welcome visitors to the community.
Dutch Bros & Multi-Tenant Building	23-038	1251 Alamo Drive	Approved	6 mi	Request to construct a new drive-through Dutch Bros. and a 5,000 sq. ft. multi-tenant commercial building.
Lagoon Valley Welcome Center	23-073	Lower Lagoon Valley	Approved	7 mi	Request to construct a 960 sq. ft. welcome center and marketing center for the Lower Lagoon Valley community.
Lower Lagoon Valley Interim Fire Station	23-097	Conservancy Trail	Plan Check	7 mi	Request to construct an interim fire station to serve the Lower Lagoon Valley area.
Horse Creek Soccer Field E	20-190	501 Browns Valley Parkway	Approved	4 mi	Request to establish a new soccer field in Centennial Park including a new junior soccer field, perimeter landscaping, and irrigation.

Cumulative Project	File No.	Location	Status	Distance from Project	Description
Eleanor Nelson Park Master Plan Modification	23-160	1800 Marshall Road	Under Review	4 mi	Modification request to revise the Eleanor Nelson Park Master Plan, originally approved in 1986, to include new amenities and a revised site layout.
Lower Lagoon Valley Temporary Water Modification	24-017	Lower Lagoon Valley	Approved	7 mi	Modification request to allow limited vertical construction activities with the installation and operation of temporary water services for fire suppression systems through the installation of temporary water tanks.
Camping World Service Bay Expansion	22-187	5051 Quinn Road	Approved	1 mi	Modification request to add three new maintenance service bays to the existing building.
The Father's House Campus Expansion	23-077	4800 Horse Creek Drive	Under Construction	2 mi	Request to construct a 20,415 sq. ft. addition onto an existing auditorium building.
Chevron Fueling CNG Addition	23-147	151 Crocker Drive	Approved	2 mi	Modification request to construct a compressed natural gas (CNG) fueling station at an existing Chevron service station. The project would construct three new fueling stations and ancillary equipment.
Chevron Hydrogen Fueling Station	22-419	299 Orange Drive	Under Construction	3 mi	Modification request to construct a hydrogen fueling station at the existing Chevron service station.
Home Depot Tool Rental Center Expansion	23-006	510 Orange Drive	Plan Check	2 mi	Design Review request for an approximately 5,000 sq. ft. expansion of the existing outdoor rental center area for Home Depot. Plans include the conversion of 16 existing parking stalls onsite to be designated as an outdoor equipment rental storage and display area.
Sunset Banquet Hall Remodel	23-114	600 Orange Drive	Plan Check	2 mi	Design Review request to modify the exterior and interior of the Sunrise Banquet Hall, including the addition of an approximately 1,677 sq. ft. storage room.
Monte Vista Food & Liquor Expansion	23-107	390 East Monte Vista Avenue	Approved	5 mi	Request to expand an existing 1,540 sq. ft. liquor store to occupy the entire building and to modify the building exterior.
Happy Home Montessori MUP	23-138	235 Arrowhead Drive	Approved	4 mi	Minor Use Permit request to convert an existing 1,899 sq. ft. single-family residence into a preschool that would serve a maximum of 30 students.
Peabody Autobody Perimeter Wall	23-146	70 Peabody Road	Under Review	4 mi	Modification request to construct a 7 ft. 7 in. tall masonry wall around the perimeter of the existing Peabody Autobody parking lot.
Family of Faith Daycare and Preschool	23-159	350 North Orchard Avenue	Approved	5 mi	Minor Use Permit request to establish a daycare and preschool within an existing community assembly.
McMurtry Creek Estates	21-227	N. of McMurtry Ln.	Under Review	4 mi	The project would include the construction of 24 total residential units.

Cumulative Project	File No.	Location	Status	Distance from Project	Description
North Village Unit 7 (Avondale & Bristow)	14-056	W. of North Village Pkwy. Aster Road	Under Construction	2 mi	The project would include the construction of 295 total residential units, 277 of which are already built and 18 under construction.
North Village Area Plan 2	19-171	E. of Interstate 505 S. of Midway Road	On Hold	2 mi	The project would include the construction of 1,251 total residential units.
North Village - Lot D/H	23-067	W. of North Village Pkwy. N. of Vacaville Center Dr.	Incomplete	2 mi	The project would include the construction of 84 total residential units
North Village Lot E	23-067	E. of North Village Pkwy. SW. of Twilight St.	Incomplete	2 mi	The project would include the construction of 11 total residential units.
Little Pool House	23-086	838 Derry Circle	Plan Check	3 mi	The project would include the construction of 1 total residential unit.
Greentree	16-289	W. of Leisure Town Road	Approved	1 mi	The project would include the construction of 909 total residential units.
The Farm at Alamo Creek	17-087	E. of Leisure Town Rd. N. of Elmira Rd.	Approved Expires 01-11-29	3 mi	The project would include the construction of 768 total residential units.
The Fields at Alamo Creek	20-289 22-180	E. of Leisure Town Road S. of Hawkins Road	Under Review	3 mi	The project would include the construction of 241 total residential units.
Roberts' Ranch Villages A & E (Wildhawk)	20-350 21-350	E. of Carroll Way N. of Fry Road	Under Construction	3 mi	The project would include the construction of 150 total residential units, 86 of which are already built, 21 that are under construction, and 43 being plan checked.
Roberts' Ranch Village B	20-227	E. of Carroll Way N. of Fry Road	Complete	3 mi	The project would include the construction of 51 total residential units, 51 of which are already built.
Roberts' Ranch Village C & L (Carmello)	21-119	W. of Carroll Way N. of Fry Road	Under Construction	3 mi	The project would include the construction of 146 total residential units, 68 of which are already built, 6 that are under construction, and 25 being plan checked.
Roberts' Ranch Village D	23-075	Carroll Way	Plan Check	3 mi	The project would include the construction of 46 total residential units.
Roberts' Ranch Villages F - K	15-238	E. of Leisure Town Road N. of Fry Road	Approved Expires 4-11-27	4 mi	The project would include the construction of 392 total residential units.
Roberts' Ranch Parcel M	23-140	E. of Carroll Way South of Brighton Landing	Under Review	3 mi	The project would include the construction of 82 total residential units.
Raysons Development	23-059	E. of Leisure Town Road S. of Maplewood Subdivision	Incomplete	2 mi	The project would include the construction of 1,000 total residential units.
Donaldson-Ramos Development	23-062	E. of Leisure Town Road N. of Hawkins Road	On Hold	3 mi	The project would include the construction of 2,931 total residential units.
A&P Children	23-136	E. of Leisure Town Road S. of Fry Road	On Hold	4 mi	The project would include the construction of 1,027 total residential units.
Harmony Village	23-115	E. of Scoggins Court N. of E Monte Vista Avenue	Approved	4 mi	The project would include the construction of 10 total residential units.

Cumulative Project	File No.	Location	Status	Distance from Project	Description
Farmstead	19-379	E. of North Orchard Avenue S. of Fruitvale Road	Under Construction	5 mi	The project would include the construction of 130 total residential units.
Montessa	22-427	1222 California Dr.	Plan Check	6 mi	The project would include the construction of 58 total residential units.
Lower Lagoon Valley Neighborhood A	23-060	E. of I-80 S. of Lagoon Valley Rd.	Plan Check	7 mi	The project would include the construction of 108 total residential units.
Lower Lagoon Valley Neighborhood B1	24-019	E. of I-80 S. of Lagoon Valley Rd.	Incomplete	7 mi	The project would include the construction of 97 total residential units.
Lower Lagoon Valley Neighborhood K1	23-128	E. of I-80 S. of Lagoon Valley Rd.	Approved	7 mi	The project would include the construction of 88 total residential units.
Village G - Unit 5	24-039	E. of Vanden Road N. of Helmsley Drive	Under Review	5 mi	The project would include the construction of 97 total residential units.
Village H - Units 2-4	21-228 22-403 23-042 23-101	W. of Leisure Town Road S. of Preston Street	Under Construction	5 mi	The project would include the construction of 212 total residential units, 54 of which are already built, 12 that are under construction, and 146 being plan checked.
Village I - Unit 1A	21-228 22-403	W. of Leisure Town Road N. of Preston Street	Under Construction	5 mi	The project would include the construction of 74 total residential units, 65 of which are already built, 7 that are under construction, and 2 being plan checked.
Village I - Unit 1B	23-031	W. of Leisure Town Road N. of Preston Street	Plan Check	5 mi	The project would include the construction of 81 total residential units.
Foxboro Knoll	22-261 23-064	E. of Nut Tree Rd. S. of Opal Way	Under Construction	5 mi	The project would include the construction of 58 total residential units, 9 of which are under construction and 49 being plan checked.
Vandengate	19-085 21-405 22-040 24-040	E. of Vanden Road S. of Joyce Drive	Under Review	4 mi	The project would include the construction of 42 total residential units.
Vanden Cove	22-004	E. of Vanden Road N. of New Alamo Creek	Approved	5 mi	The project would include the construction of 114 total residential units.
Southtown Phase 3	22-129	E. of Vanden Rd. S. of Redstone Parkway	Under Construction	5 mi	The project would include the construction of 167 total residential units, 57 of which are under construction and 110 being plan checked.
Southtown Phase 3 (remainder)	07-192	E. of Vanden Rd. S. of Redstone Parkway	Final Map Recorded No house plans	5 mi	The project would include the construction of 75 total residential units.
Nut Tree Apartments	22-002	Nut Tree Rd.	Plan Check	4 mi	The project would include the construction of 216 total residential units.
Greentree Apartments	16-289	W. of Leisure Town Road N. of Giley Way	Plan Check	1 mi	The project would include the construction of 240 total residential units.

Cumulative Project	File No.	Location	Status	Distance from Project	Description
Allison Apartments	20-314 24-004	E. of Allison Drive S. of Nut Tree Parkway	Approved	4 mi	The project would include the construction of 135 total residential units.
Peabody Apartments	20-252	148 Peabody Road	Under Construction	5 mi	The project would include the construction of 120 total residential units, 120 of which are under construction.
Elizabeth Street Mixed-Use Building	19-319 22-169	413 Elizabeth Street	Approved	5 mi	The project would include the construction of 3 total residential units.
700 PARC on Main (Site 1)	22-057	S. of E Main Street W. of Wilson Street	Plan Check	5 mi	The project would include the construction of 25 total residential units.
700 PARC on Main (Site 2)	22-057	E. of Wilson Street N. of Mason Street	Plan Check	5 mi	The project would include the construction of 21 total residential units.
700 PARC on Main (Site 3)	22-057	W. of Depot Street S. of Bush Street	Plan Check	5 mi	The project would include the construction of 35 total residential units.
Always Best Care Senior Services	23-048	518 Davis Street	Approved	5 mi	The project would include the construction of 2 total residential units.
Alamo Mixed-Use Development	19-035	N. of Alamo Drive W. of Catalpa Lane	Approved Expires 03-10-2035	5 mi	The project would include the construction of 73 total residential units.
Oak Grove Apartments	20-243 24-033	475 W Monte Vista Avenue	Under Review	6 mi	The project would include the construction of 60 total residential units.
The Palms	22-334	S. of Butcher Road	Incomplete	6 mi	The project would include the construction of 22 total residential units.
Southtown Apartments	22-173	W. of Leisure Town Road N. of Redstone Parkway	Plan Check	5 mi	The project would include the construction of 236 total residential units, all of which are under construction.
Cheyenne Estates	04-115	Rolling Sage Circle	Partially Constructed	5 mi	The project would include the construction of 15 total residential units, 13 of which are already built.
Hearn Residence	20-242	4215 Vine Court	Complete	5 mi	The project would include the construction of 1 total residential unit, which is currently under construction.
Brown House	21-098	361 Gibson Canyon Road	Plan Check	5 mi	The project would include the construction of 1 total residential unit, which is currently being plan checked.
Vine Tree Estates	22-389	E. of Vine Street W. of Gable Avenue	Under Review	5 mi	The project would include the construction of 28 total residential units.
Wilder-Garcia Residence	22-395	2030 Pinecrest Court	Approved	5 mi	The project would include the construction of 1 total residential unit.
Pacheco Ko Residence	22-402	2036 Zinfandel Court	Approved	5 mi	The project would include the construction of 1 total residential unit.
Molnar Residence	24-028	156 Adrian Court	Under Review	4 mi	The project would include the construction of 1 total residential unit.
Cromwell Residence	22-003	742 Wesley Avenue	Approved	4 mi	The project would include the construction of 1 total residential unit.

Cumulative Project	File No.	Location	Status	Distance from Project	Description
Nob Hill Estates	02-223	End of Seneca Way	Partially Constructed	6 mi	The project would include the construction of 9 total residential units, 2 of which are already built.
Stratton Estates	05-128	607 Shady Glen Road	Partially Constructed	6 mi	The project would include the construction of 10 total residential units, 4 of which are already built.
City of Dixon					
The Campus Project	-	West of Pedrick Road, South of I-80	Under Review	7 mi	The project consists of a mixed-use development that includes an approximately 48-acre Dixon Opportunity Center, approximately 144 acres of residential uses, and approximately 2.5 acres of commercial uses.
SW Dixon - Harvest Property Operable Unit 3-East (OU-3 EAST) Removal Action Work Plan	-	West A Street, Pit School Road and South Lincoln Street	Approved	5 mi	The project would include the construction of 1,365 total residential units, 450 of which are already built.
Wastewater Treatment Facility Expansion Project	-	Pedrick Road and Casey Road	Approved	5 mi	The Project would expand the City of Dixon Wastewater Treatment Facility Improvements Project to meet the buildout capacity projections based on land use designations contemplated in the updated City of Dixon 2040 General Plan.
Independence in Dixon	-	North Lincoln Street/SR 113 intersection	Approved	6 mi	The applicant is proposing to modify the project's residential component to include 93 two-story duplex buildings, totaling 186 units, rather than the previously approved 100 single-family residences.
Silvey Villas at Homestead Affordable Housing Project	-	West A Street and Gateway Drive	Approved	4 mi	The project would include the development of the project site with a 180-unit affordable housing community.
Dixon Commerce Center Expansion Project	-	2299 Commerce Way	Approved	6 mi	The project would involve expansion of the existing warehouse and associated improvements. The expansion would add 125,712 sf of new warehouse space to the southern portion of the existing warehouse.
Lincoln Square Project	-	North Lincoln Street/SR 113 intersection	Approved	6 mi	The project consists of a 10.99-acre subdivided residential community, which would be developed into 102 detached, single-family lots. Additionally, the proposed project includes a 2.27-acre commercial lot, which would be developed with a 4,500 sq. ft. Rotten Robbie convenience store, a 5,789 sq. ft. fueling canopy with eight fuel dispensers, and a 2,613 sq. ft. car wash.

4.11.5 Mitigation Measures[10]

No mitigation measures are required. Accordingly, no monitoring plans to verify the effectiveness of the mitigation are required.

[10] Appendix B (g) (1)

4.11.6 Laws, Ordinances, Regulations, and Standards[11]

4.11.6.1 Federal

No federal regulations pertain to the Project.

4.11.6.2 State

Williamson Act

The Williamson Act (Government Code Section 51200 et seq.) discourages farmland conversion to other uses by offering owners of agricultural land a property tax incentive to maintain their land in agricultural use. It is a state program implemented at the county level that allows agricultural landowners to voluntarily and contractually agree to retain land included in an agricultural preserve[12] in agricultural or open space uses for a period of at least 10 years and, in return, to pay reduced property taxes. The term of the contract automatically renews each year, such that unless it is specifically nonrenewed or cancelled, the contract always has a 10-year period horizon.

The most common method for withdrawing from a Williamson Act contract is filing a notice of nonrenewal, which can be initiated by either the land use agency or the landowner. Under this process, the contract is ended after a 9-year nonrenewal period, during which taxes gradually increase every year. A Williamson Act contract cancellation is an option under limited circumstances and conditions set forth in Government Code Section 51280 et seq. In such cases, landowners may petition the board or council of their county or city for cancellation of the Williamson Act contract. The board or council may grant tentative cancellation only if it makes required statutory findings (Government Code Section 51282(a)). The board or council must consider comments from the director of the California Department of Conservation before acting on a proposed cancellation if comments are provided. If a cancellation is approved, a Certificate of Cancellation is issued by the board or council upon the completion of all Conditions of Approval.

Neither the Project site nor the gen-tie corridor are included within a Williamson Act contract.

4.11.6.3 Local

Solano County General Plan

Solano County's General Plan consists of 12 chapters, including the introduction, nine elements applicable to the entire County, and two area plans, which include goals and policies for land use, agriculture, resources, public health and safety, economic development, transportation and circulation, public facilities and services, housing, and parks and recreation. The first area plan is specific to the Tri-City area which includes the City of Fairfield, the City of Vallejo, and the City of Benicia. The second area plan is specific to the Suisun Marsh. These area plans address area-specific issues and do not cover the Project site or the general vicinity. Countywide elements address broader issues on a countywide basis and provide a comprehensive statement of the goals, policies, and

[11] Appendix B (i) (1) (A)
[12] An agricultural preserve defines the boundary of an area within which a city or county would be willing to enter into Williamson Act contracts with landowners: The boundary is designated by resolution of the city council or board of supervisors with jurisdiction over the property. Agricultural preserves generally must be at least 100 acres in size.

programs for shaping the growth and development within the county and for protecting County agricultural and natural resources (Solano County 2008).

The Solano County General Plan includes the following goals and policies that are relevant to the Project:

Land Use Element

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.*

Policy LU.P-7: *Permit temporary land uses and uses consistent with current agricultural zoning on unincorporated lands within municipal service areas that do not conflict with planned land uses until the property is annexed to a city for urban development.*

Policy LU.P-31: *Require that all development within the airport influence areas of public and military airports complies with the Airport Land Use Commission compatibility polices and criteria as set forth in the airports' land use compatibility plans.*

Agriculture Element

Goal AR.G-2: *Preserve and protect the county's agricultural lands as irreplaceable resources for present and future generations.*

Goal AR.G-5: *Reduce conflict between agricultural and nonagricultural uses in Agriculture-designated areas.*

Goal AR.G-6: *Recognize, support, and sustain agricultural water resources for farmlands.*

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.

Policy AG.P-8: *Maintain water resource quality and quantity for the irrigation of productive farmland so as to prevent the loss of agriculture related to competition from urban water consumption internal or external to the county.*

Policy AG.P-9: *Promote efficient management and use of agricultural water resources.*

Implementation Program AG.I-1: *Create and adopt a farmland conversion mitigation program and ordinance. Require compensation for loss of agricultural land. Establish appropriate mitigation ratios for the program or utilize a graduated mitigation mechanism. The mitigation ratio shall be a minimum of 1.5:1 (1.5 acres of farmland protected through mitigation for each acre of farmland converted). The program shall not present regulatory barriers to agritourism, agricultural services, and agricultural processing in regions and within land use designations where such uses are permitted and encouraged. The program shall also establish mitigation within the same agricultural*

region as the proposed development project, or within the Agricultural Reserve Overlay district, as a preferred strategy. The program shall incorporate a fee option, and shall provide an exemption for farmworker housing. Mitigation lands shall be of similar agricultural quality to the lands being converted.

Implementation Program AG.I-23: *Work with the Solano County Water Agency, irrigation districts, reclamation districts, adjacent counties and the resource conservation districts to ensure adequate future water supply and delivery. Examine agricultural trends in surrounding communities and cooperate with adjacent counties in marketing and agricultural preservation practices. Review development proposals and require necessary studies, as appropriate, and water conservation and mitigation measures to ensure adequate water service. Examine the potential impact of water transfers from farmland to urban uses internal or external to the county and the implications for agriculture in the county. Create educational programs for farmers and ranchers that teach efficient water resource management. Explore options for expanding the county's irrigated areas. Working with the Solano County Water Agency, irrigation districts, reclamation districts, and the resource conservation districts, promote sustainable management and efficient use of agricultural water resources.*

Resources Element

Goal RS.G-2: *Ensure continued presence and viability of the county's various natural resources.*

Goal RS.G-5: *Ensure availability of affordable energy supplies and require efficiency and conservation measures to minimize energy consumption.*

Goal RS.G-8: *Achieve ongoing coordination between land use and water supply planning.*

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-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.*

Implementation Program RS.I-8: *Require the planting of shade and roadside trees in development projects for aesthetic, air quality, and other associated benefits. Encourage the use of native tree species, especially native oaks. Create development standards to ensure appropriate placement,*

care, and maintenance. The County shall evaluate the feasibility of planting of roadside trees as part of major County road improvement projects.

Policy RS.P-35: *Protect the unique scenic features of Solano County, particularly hills, ridgelines, wetlands, and water bodies.*

Policy RS.P-36: *Support and encourage practices that reduce light pollution and preserve views of the night sky.*

Implementation Program RS.I-22: *In new developments, require the use of fixtures that direct light toward target areas and shield it from spillage.*

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.*

Implementation 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 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*
- *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.*

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-54: *Reduce Solano County's reliance on fossil fuels for transportation and other energy-consuming activities.*

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.*

Policy RS.P-58: *Require the siting of energy facilities in a manner compatible with surrounding land uses, including Travis Air Force Base, and in a manner that will protect scenic resources.*

Implementation Program RS.I-49: *Require all off-road diesel powered vehicles used for construction to be newer model, low-emission vehicles, or use retrofit emission control devices, such as diesel oxidation catalyst and diesel particulate filters verified by the California Air Resources Board.*

Policy RS.P-67: *Encourage new groundwater recharge opportunities.*

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.*

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-76: *Promote sustainable management and efficient use of agricultural water resources.*

Implementation Program RS.I-70: *Require site plan elements to limit runoff from new development. These measures might include reduced pavement or site coverage, permeable pavement, vegetation that retains and filters stormwater, and/or drainage features. Limit the construction of extensive impermeable surfaces and promote the use of permeable materials for surfaces such as driveways, streets, parking lots, and sidewalks.*

Health and Safety Element

Goal HS.G-1: *Minimize the potential for loss of life and property resulting from natural or human-caused hazards.*

Goal HS.G-2: *Improve air quality in Solano County, and by doing so; contribute to improved air quality in the region.*

Goal HS.G-3: *Protect people living, working, and visiting Solano County from the harmful impacts of excessive noise.*

Policy HS.P-1: *Prevent or correct upstream land use practices that contribute to increased rates of surface water runoff.*

Policy HS.P-3: *Require new developments to incorporate devices capable of detaining the stormwater runoff caused by a 100-year storm event or to contribute to regional solutions to improve flood control, drainage, and water recharge.*

Policy HS.P-4: *Encourage the use of stormwater detention that may also be used for groundwater recharge.*

Policy HS.P-5: *Appropriately elevate and flood proof developments for human occupancy within the 100-year floodplain for the profile of a 100-year flood event.*

Implementation Program HS.I-6: *During project review, require the use of stormwater management techniques in developed upstream watershed areas that protect low-lying areas from*

flooding. Incorporate appropriate measures into the development review process to mitigate flooding and prevent erosion in and around county ditches.

Implementation Program HS.I-9: *During project review, encourage the use of landscaping practices and plants that will reduce demand on water, retain runoff, decrease flooding, and recharge groundwater.*

Implementation Program HS.I-11: *Increase the use of stormwater detention as a possible source of groundwater recharge as appropriate and only when increased retention does not increase groundwater levels to a point at which it increases the potential risk of liquefaction.*

Policy HS.P-12: *Require new development proposals 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-15: *Reduce risk of failure and reduce potential effects of failure during seismic events through standards for the construction and placement of utilities, pipelines, or other public facilities located on or crossing active fault zones.*

Policy HS.P-17: *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.*

Implementation Program HS.I-20: *Require geotechnical evaluation and recommendations before new development 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*

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.

Policy HS.P-20: *Require that structures be built in fire defensible spaces and minimize the construction of public facilities in areas of high or very high wildfire risk.*

Policy HS.P-23: *Work with fire districts including the Sonoma-Lake-Napa Fire Unit, other agencies and property owners to ensure consistency with related plans including the Unit Fire Plan and the Solano County Emergency Operations Plan, and to coordinate efforts to prevent wildfires and*

grassfires through fire protection measures such as consolidation of efforts to abate fuel buildup, access to firefighting equipment, and provision of water services.

Implementation Program HS.I-26: *Work with fire districts to ensure that new development is built to support effective firefighting. Continue to seek fire district input on new development projects and ensure that such projects incorporate fire-safe planning and building measures. Such measures may include clustering housing, buffering properties, creating defensible space around individual units, using fire-resistant building materials, installing sprinkler systems, and providing adequate on-site water supplies.*

Policy HS.P-26: *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.P-29: *Promote hazardous waste management strategies in this order of priority: source reduction, recycling and reuse, on-site treatment, off-site treatment, and residuals disposal.*

Implementation Program HS.I-32: *Follow recommended protocol from the California Department of Conservation, Geologic Survey, U.S. Occupational Safety and Health Administration, and other applicable agencies for reducing risks associated with naturally occurring hazardous materials with new development.*

Policy HS.P-44: *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-47: *Promote GHG 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.P-48: *Consider and promote land use compatibility between noise-sensitive and noise-generating land uses when reviewing new development proposals.*

Implementation Program HS.I-52: *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.*

Implementation Program HS.I-54: *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-59: *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.*

Policy HS.P-49: *Encourage design that minimizes negative effects of noise without compromising aesthetic values and pedestrian and auto connectivity.*

Policy HS.P-52: *Minimize noise conflicts between current and proposed land uses and transportation networks by encouraging compatible land uses around critical areas with higher noise potential.*

Implementation Program HS.I-62: *When reviewing new development proposals,*

- *Require noise abatement measures to ensure that noise levels will not exceed those indicated in Tables HS-3 and HS-4.*
- *Require 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 Tables HS-3 and HS-4.*
- *Where development projects produce, or are affected by, nontransportation-related noise, require the inclusion of project features that will enable the project to achieve acceptable levels specified in Table HS-4, 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 HS-4. The total noise level resulting from new sources and ambient noise shall not exceed the standards in Table HS-4, as measured at outdoor activity areas of any affected noise sensitive land use except:*
  - *If the ambient noise level exceeds the standard in Table HS-4, the standard becomes the ambient level plus 5 dB.*
  - *Reduce the applicable standards in Table HS-4 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 appropriate noise abatement measures will be required for all discretionary projects where any of the following conditions apply:*
  - *The project is located 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 HS-4 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.*

Implementation Program HS.I-64: *Promote the use of berms, landscaping, setbacks, or architectural design for noise abatement, in addition to conventional wall barriers, to enhance aesthetics and minimize pedestrian barriers. Development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation, stationary sources, or agricultural operations exceeding, or estimated to exceed, levels specified in Table HS-2 shall require transportation planning, traffic calming, site planning, buffering, sound insulation, or other methods to reduce noise exposure in outdoor activity areas and interior spaces to the levels specified in Table HS-2.*

Implementation Program HS.I-66: *Locate industrial and other noise-generating land uses away from noise-sensitive land uses and/or require substantial noise sources to be completely enclosed within buildings or structures.*

Transportation and Circulation

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.*

Public Facilities and Services

Goal PF.G-1: *Provide adequate public services and facilities to accommodate the level of development planned by the County.*

Goal PF.G-3: *Provide effective and responsive fire and police protection, and emergency response service.*

Policy PF.P-2: *Require new development and redevelopment to pay its fair share of infrastructure and public service costs.*

Policy PF.P-5: *Design and locate new development to maximize the use of existing facilities and services and to coordinate with the cities the need for additional County services.*

Implementation Program PF.I-4: *Evaluate the level of services and funding needs of the various agencies and districts that will provide public facilities and services during project review to ensure that adequate levels of service are provided and facilities are maintained.*

Policy PF.P-10: *Maintain an adequate water supply by promoting water conservation and development of additional cost-effective water sources that do not result in environmental damage.*

Policy PF.P-14: *In areas identified with marginal water supplies, require appropriate evidence of adequate water supply and recharge to support proposed development and water recharge.*

Policy PF.P-20: *Minimize the consumption of water in all new development.*

Implementation Program PF.I-11: *Continue to require preparation of a water supply assessment pursuant to the California Water Code to analyze the ability of water supplies to meet the needs of regulated projects, in the context of existing and planned future water demands. Review the availability of water to serve new developments in the unincorporated area before permitting such developments and ensure that the approval of new developments will not have a substantial adverse impact on water supplies for existing water users.*

Implementation Program PF.I-12: *Continue to work with water suppliers to ensure adequate future water supply and delivery. Review development proposals and require necessary studies, as appropriate, and water conservation and mitigation measures to ensure adequate water service.*

Implementation Program PF.I-13: *Require new development proposing on-site water supplies in areas identified with marginal water supplies to perform a hydrologic assessment to determine whether project plans meet the County's hydrologic standards.*

Implementation Program PF.I-14: *Review plans for new development projects to ensure that they have provided for water on-site or through a public agency.*

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.*

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.

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.*

Implementation Program PF.I-54: *Direct utility companies to locate transmission lines within existing rights-of-way or other locations that minimize impacts on human populations and natural areas.*

Solano County Code

Applicable sections of the Solano County Code are included in Table 4.11-3. As discussed, the Project will be consistent with applicable Solano County Code requirements. Refer to Section 4.11.3.1 for additional information.

Solano County Zoning Ordinance

The Solano County Zoning Ordinance is discussed in Sections 4.11.2.2 and 4.11.3.1. As discussed, the Project will be consistent with the Solano County Zoning Ordinance. Refer to Sections 4.11.2.2 and 4.11.3.1 for additional information.

Solano County Ordinance No. 2024-1852-U-E

Solano County Ordinance No. 2024-1852-U-E is discussed in Sections 4.11.2.2 and 4.11.3.1. As discussed, the Project will be inconsistent with the County's BESS moratorium. However, this inconsistency will not result in a significant environmental impact. Refer to Sections 4.11.2.2 and 4.11.3.1 for additional information.

City of Vacaville General Plan

The City General Plan consists of 10 chapters, including the introduction, seven elements applicable to the entire City, and an additional Housing Element that was certified September 2023. The General Plan provides a vision for the future and establishes a framework for how Vacaville should grow and change over the next two decades. While embracing this change, the General Plan also establishes goals and policies that empower the City and the community to maintain the goals and values that make Vacaville the thriving and friendly place it is today (City of Vacaville 2015).

The City General Plan includes the following goals and policies that are relevant to the Project:

Land Use Element

Goal LU-2: *Carefully plan for new development in undeveloped portions of Vacaville*

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.*

Goal LU-11: *Improve community health and reduce pollution exposure and health risks across the city and reducing asthma, especially in low-income and impacted communities.*

Policy LU-P11.6: *Require potential developers and/or project applicants to provide evidence that the development site is not contaminated or that the formerly contaminated site has been adequately remediated before allowing new development.*

Goal LU-20: *Provide for orderly, well-planned, and balanced growth in the Northeast Growth Area.*

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.*

Policy LU-P20.3: *Require that specific plans be prepared for development in the Northeast Growth Area to ensure that coordinated plans for land uses, public facilities, and public services are created for each area, and require that these specific plans are consistent with the City's updated infrastructure master plans that account for development in the Northeast Growth Area.*

Policy LU-P20.4: *Require that specific plans for the Northeast Growth Area include a diagram showing the distribution of land uses and define permitted and conditionally permitted land uses, major public facilities (including schools, parks, roads, water, sewer, and drainage facilities), phasing, infrastructure financing mechanisms, interim fire protection measures, and any other*

elements that may be needed to ensure an orderly development process with minimal adverse impacts to the existing community.

Policy LU-P20.5: *One comprehensive infrastructure master plan shall be prepared for the Northeast Growth Area prior to development in this area to ensure coordinated planning for infrastructure, public facilities, and public services.*

Policy LU-P20.6: *Require that the Specific Plan for the Northeast Growth Area comply with the City Gateways Design Master Plan.*

Policy LU-P21.7: *Require specific plans prepared for the East of Leisure Town Road and Northeast Growth Area to provide thoughtful transitions between residential areas and land designated for business parks, industrial parks, and technology parks.*

Goal LU-29: *Ensure that development near the Nut Tree Airport and Travis Air Force Base is compatible with airport uses and conforms to safety requirements.*

Policy LU-P29.3 Ensure that land uses in the vicinity of Nut Tree Airport, or potentially affected by Travis Air Force Base, are compatible with airport operations and are consistent with the Airport Land Use Compatibility Plans for both airports.

Transportation Element

Goal TR-3: *Take proactive steps to reduce Greenhouse Gas Emissions caused by Vehicle Miles Travelled 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 this Transportation Element (Figure TR-6).*

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 5 minutes.*

Conservation and Open Space Element

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-P1.7: *Encourage new development to incorporate native vegetation into landscape plans.*

Policy COS-P1.9*: Require that new development include provisions to protect and preserve wetland habitats that meet one of the following conditions:*

- *The wetlands contribute to the habitat quality and value of reserve/preserve lands established or expected to be established in perpetuity for conservation purposes.*
- *The wetlands are contiguous to riparian or stream corridors, or other permanently protected lands.*
- *The wetlands are located within or contiguous to other high value natural areas.*

Policy COS-P1.10: *Where avoidance of wetlands is not practicable or does not contribute to long-term conservation of the resources, require new development to provide for off-site mitigation that results in no net loss of wetland acreage and functional value within the watersheds draining to the Delta or Suisun Marsh.*

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 (see Appendix A for a list of the Avoidance and Minimization Measures that are applicable to Vacaville). In addition, require that development projects provide copies of required permits, or verifiable statements that permits are not required, from the California Department of Fish and Wildlife (2081 Individual Take Permit) and US Fish and Wildlife Service (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.*

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.*

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.*

Goal COS-10: *Promote a sustainable energy supply.*

Policy COS-P10.1: *Encourage the development of energy generated by renewable fuel sources within the city, provided that significant adverse environmental impacts associated with such development can be successfully mitigated.*

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.*

Goal COS-13*: Promote water conservation as an important part of a long-term and sustainable water supply.*

Policy COS-P13.4: *Require new development to incorporate Best Management Practices (BMPs) for water use and efficiency and demonstrate specific water conservation measures.*

Goal COS-14: *Protect the quality and supply of surface water and groundwater resources.*

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.*

Public Services and Facilities Element

Goal PUB-1: *Provide adequate fire, rescue, and emergency medical services to serve existing and new development.*

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-P2.4: *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.*

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*

Goal PUB-10*: Ensure that a reliable water supply can be provided within the city.*

Policy PUB-P10.2: *Require new development to construct water source or storage facilities if the project's Water Supply Assessment indicates a deficiency in the water source.*

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.*

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*

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-P2.4: *Design storm drainage infrastructure to serve dual purposes to the extent possible. This includes the following:*

- *Drainage facilities integrated into recreation corridors with bike paths, sidewalks, and landscaping.*
- *Drainage channels integrated with transportation and environmental corridors.*
- *Active and passive recreation areas incorporated into detention basins where feasible*
- *Drainage facilities designed to incorporate natural infrastructure and support ecosystem health where feasible.*

Policy SAF-P2.5: *Maintain open areas needed to retain stormwater and prevent flooding of urban or agricultural land.*

Goal SAF-5: *Protect lives and property from wildland fire hazards.*

Policy SAF-P5.2*: Require that all development in areas of potential wildland fire hazards, including agricultural areas east of Leisure Town Road, include the following:*

- *Fire breaks adjoining open space areas.*
- *Adequate access to adjoining open space areas,*
- *Clearance around structures and energy infrastructure.*
- *Fire-resistant groundcover.*
- *Fire-resistant roofing materials.*
- *Adequate emergency water flow.*
- *Adequate road dimension 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*: Require all development applications to be reviewed and approved by the Fire Department prior to project approval.*

Goal SAF-6: *Minimize risks from the harmful effects of hazardous materials and waste.*

Policy SAF-P6.6: *Promote the safe transport of hazardous materials through Vacaville by implementing the following measures:*

- *Maintain formally-designated hazardous material carrier routes to direct hazardous materials away from populated and other sensitive areas.*
- *Prohibit vehicles transporting hazardous materials from parking on City streets.*

- *Require that new pipelines and other channels carrying hazardous materials avoid residential areas and other immobile populations to the extent possible.*

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 onsite resilience. Support financing efforts to increase community access to these features.*

Noise Element

Goal NOI-4: *Minimize noise from stationary sources.*

Policy NOI-P4.1*: Preclude the generation of annoying or harmful noise through conditions of approval on stationary noise sources, such as construction and property maintenance activity and mechanical equipment.*

Policy NOI-P4.2*: Require the following construction noise control measures:*

- *Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.*
- *Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.*
- *Utilize "quiet" air compressors and other stationary noise sources where technology exists.*
- *Limit hours of operation of outdoor noise sources through conditions of approval.*

City of Vacaville Municipal Code

Applicable sections of the City of Vacaville Municipal Code are discussed in Section 4.11.3.1. As discussed, the Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, will be consistent with applicable City of Vacaville Municipal Code requirements. Refer to Section 4.11.3.1 for additional information.

City of Vacaville Zoning Ordinance

The City of Vacaville Zoning Ordinance is discussed in Sections 4.11.2.3 and 4.11.3.1. As discussed, the Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, will be consistent with the City of Vacaville County Zoning Ordinance. Refer to Sections 4.11.2.3 and 4.11.3.1 for additional information.

City of Vacaville Ordinance No. 1993

City of Vacaville Ordinance No. 1993 is discussed in Sections 4.11.2.3 and 4.11.3.1. As discussed, the Project, and specifically the portion of the gen-tie line located within the City's jurisdiction, will be consistent with the City's BESS moratorium, as this moratorium does not apply to transmission lines which are the only Project component located in the City. Refer to Sections 4.11.2.3 and 4.11.3.1 for additional information.

Travis Air Force Base Land Use Compatibility Plan

The Travis AFB LUCP was adopted to ensure that future land uses in the surrounding area will remain compatible with the realistically foreseeable, ultimate potential aircraft activity at Travis AFB. The LUCP regulates land use and safety hazards within the Travis AFB AIA, and includes criteria, maps, and policies to guide land use development review in the AIA (Solano County 2024b). As discussed in Section 4.11.3.1 above, the Project will not conflict with this plan nor is required to be submitted to the ALUC for review.

Solano Multi-Species Habitat Conservation Plan

The Solano Multi-Species Habitat Conservation Plan establishes a framework for complying with federal and state regulations for endangered species undertaken by or under the permitting authority/control of the Habitat Conservation Plan participants within the plan area. The Solano Multi-Species Habitat Conservation Plan is considered to be the best available information when considering impacts of proposed projects on the full range of protected wildlife, plants, and habitats that occur in Solano County. Additionally, the Solano Multi-Species Habitat Conservation Plan development has been guided by a collaborative effort among several local, state, and federal agencies intended to provide an effective framework to protect, enhance, and restore natural resources in the County and enable local projects to comply with state and federal regulatory requirements (Solano County Water Agency 2012). As discussed in Section 4.11.3.1 above, the Project will not conflict with this plan.

4.11.7 Agencies and Agency Contacts[13]

Table 4.11-5 provides contact information for the agencies responsible for land use issues.

Table 4.11-5. Agency Contacts for Land Use

Agency	Contact	Permit/Issue
Solano County Department of Resource Management, Planning Services Division	Nedzlene Ferrario, Principal Planner 675 Texas Street, Suite 5500 Fairfield, CA 94533 (707) 784-3170 NNFerrario@solanocounty.com	Land Use Plans and Permits
Solano County Department of Resource Management, Building and Safety Services Division	675 Texas Street, Suite 5500 Fairfield, CA 94533 RMHelp@solanocounty.com	Building Permits
City of Vacaville Community Development Department, Planning and Development Division	Erin Morris, Director of Community Development 650 Merchant Street Vacaville, CA 95688 (707) 449-5307 erin.morris@cityofvacaville.com Albert Enault, Senior Planner 650 Merchant Street Vacaville, CA 95688 (707) 449-5364 Albert.Enault@cityofvacaville.com	Land Use Planning/Coordination (as needed)

[13] Appendix B (i) (1) (B)

4.11.8 Required Permits and Permitting Schedule[14]

Table 4.11-6 provides the permits that are required that are outside of the authority of the CEC, as well as the anticipated permitting schedule.

Table 4.11-6. Permits and Permitting Schedule for Land Use

Permit/Issue	Agency	Schedule
Encroachment Permits	Solano County Public Works Division	Solano County has indicated they will not issue encroachment permits for the Project
Encroachment Permits	City of Vacaville Public Works Department	6 weeks for processing and approval, if City will issue encroachment permits for the Project

4.11.9 References[15]

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4.12 Mineral Resources

This section evaluates the issues related to mineral resources that have been identified in the Corby Battery Energy Storage System Project (Project) area, in accordance with California Energy Commission guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It considers the physical setting and regulatory context while evaluating the criteria for potential impacts and their significance. The methods used to evaluate these impacts are explained below, and the results of the impact assessment are presented.

4.12.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Result in the loss of availability of a known mineral resource that would be a value to the region and the residents of the state?			X	
2.	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?				X

4.12.2 Affected Environment

The existing conditions for this resource and Project site consider its natural setting, and primarily focus on the geology and mineral resources within the area. The potential for impacts to mineral resources is evaluated within this context.

4.12.2.1 Geologic Environment

The geology of the region is described in greater detail in Section 4.7*, Geology, Soils, and Paleontological Resources*. The Project site is located in the Great Valley geomorphic province, at the southern end and the western side of the Sacramento River Valley. The topography near the site is generally flat and rises gently toward the west where the bordering Coastal Ranges geomorphic province has elevations reaching 2,800 feet above mean sea level in the Vaca Mountains. The eastern flank of the Coastal Ranges province and this part of the Great Valley province drain east toward the Sacramento River or southeast toward the Sacramento-San Joaquin Delta. Elevations on the Project site are less than 80 feet above mean sea level.

The underlying geology at the Project site is unconsolidated alluvium, deposited primarily in alluvial fan environments during the Quaternary period between 11,000 to 3,000,000 years ago. The thickness of these sediments can reach from 20 feet to 100 feet below the ground surface (see the preliminary geotechnical investigation provided in Appendix 2-D). According to current geologic mapping, the primary designation of this sediment is “Qpf” Alluvial fan deposits (latest Pleistocene). They are characterized as containing sand, gravel, silt, and clay that is moderately to poorly sorted and bedded. They are similar to Holocene fans (Qhf), but more dissected (Dawson 2009).

4.12.2.2 Mineral Resource Potential

The Mineral Resources Data System (MRDS) is an online database with mine information administered by the U.S. Geological Survey (USGS). This system maintains data on metallic and nonmetallic mineral resources, including deposit name, location, commodity, deposit description, production status, and references. The online database was reviewed to confirm the presence or absence of existing surface mines, closed mines, occurrences/prospects, and unknown/undefined mineral resources within the study area (USGS 2024). No mineral resources or operations are located within the Project site or generation tie (gen-tie) corridor boundaries.

The MRDS identifies a total of 10 locations within 10 miles of the Project site (see Table 4.12-1). However, these locations provide data that are among the lowest quality in the system and has limited information on the status of the operation. All are identified as surface operations providing non-metallic commodities.

Table 4.12-1. MRDS Mineral Resource Producers

MRDS ID	Site Name/ Location	Operation Type/ Commodity	Distance to Project	Status[1/]	Data Quality[2/]
10141952	Valley Gravel Company Pit Yolo County	Surface mine: Sand and Gravel, Construction	9.15 miles	Unknown	D
10165637	Standard Oil Deposit Solano County	Surface mine: Clay	3.74 miles	Unknown	D
10165788	Tolenas Springs Solano County	Surface mine: Stone, Crushed/Broken	9.32 miles	Unknown	D
10190614	Quarry Solano County	Surface mine: Stone	3.77 miles	Unknown	E
10214504	Pacific Portland Cement Co. Solano County	Surface mine: Stone, Crushed/Broken	8.25 miles	Unknown	D
10238264	Quarry Solano County	Surface mine: Sand and Gravel, Construction	9.99 miles	Unknown	D
10238486	Gravel Pit Solano County	Surface mine: Sand and Gravel, Construction	9.28 miles	Unknown	E
10260035	Greenstone Quarry Amador County	Surface mine: Stone	6.67 miles	Producer	D
10284423	Q Ranch Pit Amador County	Surface mine: Sand and Gravel, Construction	2.75 miles	Producer	D
10287652	Cement Hill Solano County	Surface mine: Stone, Crushed/Broken	8.10 miles	Unknown	D

Notes:

1/ Status: **Unknown** (At the time of data entry, either the development status was unknown or the data source this record came from did not specify this value). **Producer** (A mine in production at the time the data was entered. An intermittent producer that produces on demand or seasonally with variable lengths of inactivity is considered a producer).

2/Data Quality: Records are graded A through E with A indicating most complete and consistent, to E indicating records lacking information considered important.

The state of California maintains a robust database on active and permitted mines as well as a separate database on oil and gas wells and injectors. Figure 4.12-1 shows the regional locations of this activity surrounding the Project site. The state identifies seven surface mines in Solano County within 25 miles of the Project site (see Table 4.12-2). Five of these mines are active, one is closed, and one is idle.

The petroleum industry has been historically active in the surrounding area. A number of natural gas fields are located east of the project site. The three closest are the Bunker Gas Field, the Millar Gas Field, and the Maine Prairie Gas Field. While there are dozens of wells collectively located in these fields, they appear to be mostly plugged and the fields essentially inactive or abandoned. The most current annual report (for 2021) indicates that there was no gas production from any of these gas fields for the year (CalGEM 2021).

Table 4.12-2. California Surface Mine Data: Solano County

SMARA ID	Site Name/ Location	Operation Type/ Commodity	Distance to Project	Status and Notes
91-48-0001	Nelson Hill Quarry Solano County	Quarry: Sand and Gravel	16.2 miles	Idle. Reclamation Plan on file.
91-48-0002	Lake Herman Quarry Solano County	Quarry: Stone	23.7 miles	Active. Reclamation Plan on file.
91-48-0004	Potrero Hills Quarry Solano County	Open Pit mine/Quarry: Sand and Gravel	12.2 miles	Active. Permit and Reclamation Plan on file; Inspected 04/03/2024.
91-48-0005	Goodyear Quarry (Parish Pit) Solano County	Quarry: Stone	21.7 miles	Closed (no intent to resume). Reclamation in progress.
91-48-0006	Tule Vista Livestock Co. Solano County	Open Pit mine: Sand and Gravel	13.4 miles	Active. Permit and Reclamation Plan on file; Inspected 11/11/2022 and 04/05/2024.
91-48-0007	Decker Island Solano County	Dredge, Plant, or Mill: Sand and Gravel	23.4 miles	Active. Permit and Reclamation Plan on file; Inspected 04/01/2024
91-48-0010	Rio Vista Sand Pit Solano County	Undefined: Fill Dirt	18.9 miles	Active. No documents on file.

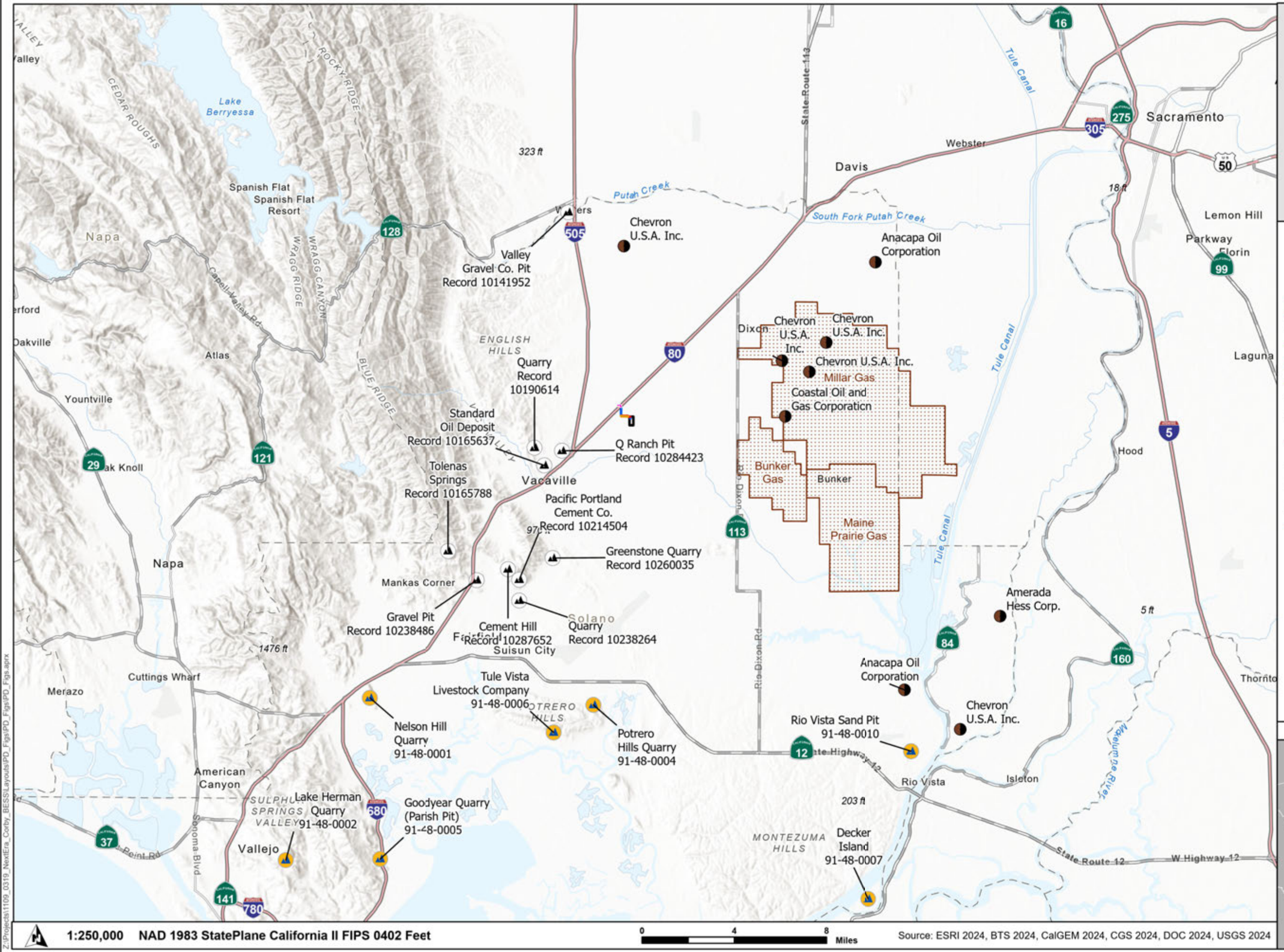
Source: DOC (2024)

Pursuant to the Surface Mining and Reclamation Act (SMARA), as amended, the State of California mandated the development of mineral land classifications to help identify and protect mineral resources. After classification of mineral resource areas, the SMARA provides for the designation of lands containing mineral deposits of regional or statewide significance. In addition, the SMARA was designed to provide guidelines for the proper reclamation of mineral lands. In compliance with the SMARA, the State Mining and Geology Board established Mineral Resource Zones (MRZs) to classify lands that contain mineral deposits. According to California Geological Survey maps, the Project site is not located within an MRZ (CGS 2024).

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.12-1 Mineral Resources

Solano County, CA



- USGS MRDS Locations
- California Surface Mine Locations
- Oil Well Locations
- Well Field

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

Transportation

- Interstate Highway
- U.S. Highway
- State Highway

PG&E Features

- Gen-tie (Overhead; PG&E)

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:250,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 4 8 Miles

Source: ESRI 2024, BTS 2024, CalGEM 2024, CGS 2024, DOC 2024, USGS 2024

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The California Geological Survey (CGS) has prepared a number of resource assessments for various Production-Consumption Regions within the state. The assessment for the greater Sacramento area covers parts of eight counties and extends from the Project site location in the west to the Sierra Nevada Mountain foothills in the east. The majority of land surrounding the Project site is classified as MRZ category 1 (MRZ-1) where there is "little likelihood" of finding significant aggregate resources. There are pockets of land classified in category MRZ-4 relatively close by, the largest of which is northwest of Dixon. However, the MRZ-4 category is where "available geologic information is inadequate to assign to any other mineral resource zone category." Hence, there is limited predictive value to this classification. Based on the geological environment and historical trends, the potential for occurrence of locatable minerals is low within the area immediately surrounding the Project site. The most viable sources of aggregate in the greater Sacramento area are located east of the city of Sacramento (O'Neal and Gius 2018).

4.12.3 Environmental Analysis

4.12.3.1 CEQA Impact Analysis

IMPACT 4.12-1: 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? (Less than significant impact)

There are several mineral resource locations and mining activities that occur within close proximity to the Project site, but no activity on the site (see Figure 4.12-1 and Tables 4.12-1 and 4.12-2). Site grading will be required for the construction of the Project substation, battery energy storage system array, roads, and stormwater facilities. The total graded area for the Project site will be approximately 18.5 acres. The site grading will require approximately 24,550 cubic yards of import fill, which will be sourced from a permitted commercial facility within 50 miles of the Project site (potentially one identified in Tables 4.12-1 and 4.12-2). This is a substantial volume of fill, which would be close to 40,000 tons using a density of 120 pounds per cubic foot. However, the projected aggregate production for the greater Sacramento production/consumption area for 2024 is over 23 million tons (O'Neal and Gius 2018). That makes the Project demand about 0.1 percent of the annual total and thus not a serious concern from a resource-use perspective.

Although numerous wells have been drilled in the gas fields immediately east of the Project site, most of these wells are plugged, and the gas fields themselves are inactive. The Project will not be using natural gas during construction or operations, so there will be no resource depletion resulting from the Project.

As a result, the Project will not cause a significant loss of availability of a known mineral resource that will be of value to the region and the residents of the state.

IMPACT 4.12-2: 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? (No impact)

The Project site is not delineated as a locally important mineral resource. The area surrounding the Project site has a mineral land classification of MRZ-1 (areas where available geologic information

indicates that little likelihood exists for the presence of significant concrete aggregate resources (O'Neal and Guis 2018). Therefore, implementation of the Project will not result in a loss of locally important mineral resources.

4.12.3.2 PG&E Facilities

To accommodate the Project, Pacific Gas and Electric (PG&E) will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

The gen-tie corridor, including the PG&E gen-tie segment, is not located on any designated mineral resource area, nor is it connected to areas where previous mining or petroleum extraction activity or claims are associated. The nearest locations of such activity are described above in Section 4.12.2.2.

4.12.4 Cumulative Effects

As described above, the Project will result in less than significant to no impact to mineral resources. Therefore, the Project will not cause or contribute to a significant cumulative impact to mineral resources.

4.12.5 Mitigation Measures

Because there are no environmental impacts expected to mineral resources during construction and operation of the Project, no project design or mitigation measures are necessary.

4.12.6 Laws, Ordinances, Regulations, and Standards

4.12.6.1 Federal

No federal statutes, regulations, plans, or policies govern mineral resources on or near the Project site.

4.12.6.2 State

State Surface Mining and Reclamation Act of 1975

The SMARA (Public Resources Code §2710 et seq.) mandated the initiation by the State Geologist of mineral land classification to help identify and protect mineral resources in areas within the state subject to urban expansion or other irreversible land uses that would preclude mineral extraction. The SMARA also allowed the State Mining and Geology Board to designate lands containing mineral deposits of regional or statewide significance. Mineral lands are mapped according to jurisdictional

boundaries (i.e., counties), mapping all mineral commodities at one time in the area, using the California Mineral Land Classification System (DOC 2022). The objective of classification and designation processes is to ensure, through appropriate lead agency policies and procedures, that mineral deposits of statewide or regional significance are available when needed.

California Public Resources Code

Division 3 (Oil and Gas) of the California Public Resources Code addresses petroleum mineral resource rights, permitting for well drilling, underground injection, operating and maintaining wells, oil and gas production, and resource conservation, among other activities. The Division of Oil, Gas, and Geothermal Resources was created in 1915 to permit and regulate oil and gas wells, as well as to track information about production. Assembly Bill 1057 was signed into law in October 2019, changing the official name to California Geologic Energy Management (CalGEM) Division.

4.12.6.3 Local

Solano County

In 2022, the Solano County Board of Supervisors approved Ordinance No. 2022-1839 replacing Chapter 29 of the Solano County Code (Surface Mining and Reclamation) with a revised version to follow the requirements of the SMARA. Every county is required to adopt ordinances consistent with state policy for review and approval procedures governing reclamation plans, establishing and maintaining financial assurances, and issuing permits for surface mining operations.

Under Chapter 29 of the Solano County Code, the County authorizes mining activities on unincorporated lands through the issuance of surface mining permits. In addition, the County requires reclamation activities through an approval process for reclamation plans. Chapter 29 requirements are intended to be equivalent to, or more restrictive than, the provisions of SMARA and related state regulations.

4.12.7 Agencies and Agency Contact

Details on State agency contacts for mineral resources are provided in Table 4.12-3.

Table 4.12-3. Agency Contacts for Mineral Resources

Agency	Contact	Permit/Issue
California Geological Survey Mineral Resources Program 715 P Street, MS 1901 Sacramento, CA 95814	Fred Gius Supervising Engineering Geologist (916) 445-1825 minerals@conservation.ca.gov	No applicable permits

4.12.8 Required Permits and Permitting Schedule

There are no plans to directly extract minerals specifically for this Project. All fill materials will be obtained from a properly permitted and licensed facility. No mining activities will be part of the work required for construction or operations of the Project. Therefore, no permits will be required for mining activities.

4.12.9 References

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4.13 Noise

This section identifies and evaluates issues related to noise in the context of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

4.13.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	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?			X	
2.	Generation of excessive groundborne vibration or groundborne noise levels?			X	
3.	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?				X

4.13.2 Affected Environment

4.13.2.1 Acoustic Terminology and Metrics

All sounds originate with a source, whether it is a human voice, motor vehicles on a roadway, or a combustion turbine. Energy is required to produce sound and this sound energy is transmitted through the air in the form of sound waves—tiny, quick oscillations of pressure just above and just below atmospheric pressure. These oscillations, or sound pressures, impinge on the ear, creating the sound we hear. A sound source is defined by a sound power level (abbreviated "L_W"), which is independent of any external factors. By definition, sound power is the rate at which acoustical energy is radiated outward and is expressed in units of watts.

A source sound power level cannot be measured directly. It is calculated from measurements of sound intensity or sound pressure at a given distance from the source outside the acoustic and geometric near-field. A sound pressure level (abbreviated "L_P") is a measure of the sound wave fluctuation at a given receiver location and can be obtained through the use of a microphone or calculated from information about the source sound power level and the surrounding environment. The sound pressure level in decibels (dB) is the logarithm of the ratio of the sound pressure of the source to the reference sound pressure of 20 microPascals (µPa), multiplied by 20. The range of sound pressure that

can be detected by a person with normal hearing is very wide, ranging from about 20 µPa for very faint sounds at the threshold of hearing, to nearly 10 million µPa for extremely loud sounds such as a jet during take-off at a distance of 300 feet.

Broadband sound includes sound energy summed across the entire audible frequency spectrum. In addition to broadband sound pressure levels, analysis of the various frequency components of the sound spectrum can be completed to determine tonal characteristics. The unit of frequency is hertz (Hz), measuring the cycles per second of the sound pressure waves. Typically, the frequency analysis examines 11 octave bands ranging from 16 Hz (low) to 16,000 Hz (high). Since the human ear does not perceive every frequency with equal loudness, spectrally varying sounds are often adjusted with a weighting filter. The A-weighted filter is applied to compensate for the frequency response of the human auditory system and is represented in dBA.

Sound can be measured, modeled, and presented in various formats, with the most common metric being the equivalent sound level (L_{eq}). The L_{eq} has been shown to provide both an effective and uniform method for comparing time-varying sound levels and is widely used in acoustic assessments in the State of California. Estimates of noise sources for common outdoor and indoor activities and acoustic environments are shown in Table 4.13-1. Table 4.13-2 presents additional reference information on terminology used in the report.

Table 4.13-1. Sound Pressure Levels (L_P) of Typical Noise Sources and Acoustic Environments

Common Outdoor Activities	Noise Level (dB)	Common Indoor Activities
	110	Rock band
Jet flyover at 1,000 feet	100	
Gas lawn mower at 3 feet	90	
Diesel truck at 50 feet, at 50 mph	80	Food blender at 3 feet; garbage disposal at 3 feet
Noisy urban area, daytime; gas lawn mower at 100 feet	70	Vacuum cleaner at 10 feet
Commercial area; heavy traffic at 300 feet	60	Normal speech at 3 feet
Quiet urban, daytime	50	Large business office; dishwasher next room
Quiet urban, nighttime	40	Theater; large conference room (background)
Quiet suburban, nighttime	30	Library
Quiet rural, nighttime	20	Bedroom at night; concert hall (background)
	10	Broadcast/recording studio
Lowest threshold of human hearing	0	Lowest threshold of human hearing

dBA – A-weighted decibel
Source: California Department of Transportation 2013

Table 4.13-2. Acoustic Terms and Definitions

Term	Definition
Noise	Typically defined as unwanted sound. This word adds the subjective response of humans to the physical phenomenon of sound. It is commonly used when negative effects on people are known to occur.
Sound Pressure Level (L_P)	Pressure fluctuations in a medium. Sound pressure is measured in dB. Referenced to 20 µPa, the approximate threshold of human perception to sound at 1,000 Hz.

Term	Definition
Sound Power Level (L_W)	The total acoustic power of a noise source measured in dB referenced to picowatts (one trillionth of a watt). Noise specifications are provided by equipment manufacturers as sound power as it is independent of the environment in which it is located. A sound level meter does not directly measure sound power.
Equivalent Sound Level (L_{eq})	The L_{eq} is the continuous equivalent sound level, defined as the single sound pressure level that, if constant over the stated measurement period, would contain the same sound energy as the actual monitored sound that is fluctuating in level over the measurement period.
A-Weighted Decibel (dBA)	Environmental sound is typically composed of acoustic energy across all frequencies. To compensate for the auditory frequency response of the human ear, an A-weighting filter is commonly used for describing environmental sound levels. Sound levels that are A-weighted are presented as dBA in this report.
Unweighted Decibels (dBL)	Unweighted sound levels are referred to as linear. Linear decibels are used to determine a sound's tonality and to engineer solutions to reduce or control noise as techniques are different for low and high frequency noise. Sound levels that are linear are presented as dBL in this report.
Propagation and Attenuation	Propagation is the decrease in amplitude of an acoustic signal due to geometric spreading losses with increased distance from the source. Additional sound attenuation factors include air absorption, terrain effects, sound interaction with the ground, diffraction of sound around objects and topographical features, foliage, and meteorological conditions including wind velocity, temperature, humidity, and atmospheric conditions.

4.13.2.2 Vibration Terminology and Metrics

Vibration is an oscillatory motion that is described in terms of displacement, velocity, or acceleration. Velocity is the most common descriptor used when evaluating human perception or structural damage. Velocity represents the instantaneous speed of movement and more accurately describes the response of humans, buildings, and equipment to vibrations.

Peak-Particle-Velocity (PPV) and root mean square velocity are typical metrics used to describe vibration levels in units of inches per second in the United States. Table 4.13-3 provides typical vibration sources as well as the human and structural response to groundborne vibrations.

Table 4.13-3. Typical Levels of Groundborne Vibration

Human/Structural Response	PPV (in/sec)	Typical Sources (50 feet from source)
Minor Cosmetic Damage, Fragile Buildings	0.4	Blasting from Construction Projects
	0.17–0.2	Heavy Tracked Construction Equipment
Difficulty with Tasks, Such as Reading a Computer Screen	0.125	
	0.074	Commuter Rail, Upper Range
Residential Annoyance, Infrequent Events	0.04	Rapid Transit, Upper Range
	0.013	Commuter Rail, Typical
	0.023	Bus or Truck Bump Over
Residential Annoyance, Frequent Events	0.013	Rapid Transit, Typical
Approximate Threshold of Human Perception	0.007	
	0.005	Bus or Truck, Typical
	0.0013	Typical Background Vibration Levels

The degree of annoyance cannot always be explained by the magnitude of the vibrations alone. Phenomena, such as groundborne noise and rattling, visual effects (e.g., movement of hanging objects), and time of day, all influence the response of individuals. The American National Standards Institute (ANSI) and the International Organization for Standardization (ISO) have developed criteria

for evaluation of human exposure to vibrations. The recommendations of these standards and other studies evaluating human response to vibrations have been incorporated into the Federal Transit Administration's (FTA) *Transit Noise and Vibration Impact Assessment Manual* (2018). The criteria within this manual are used to assess noise and vibration impacts from transit operations.

4.13.2.3 Existing Conditions[1]

The facility will be constructed on an approximately 40.3-acre privately owned parcel in Solano County, California. The proposed Project site is currently used as agricultural land for row crops. The surrounding land is also in agricultural use, including orchards to the south, irrigated pastures to the east and west, and rural residential use to the north.

To document the existing conditions, long-term far-field baseline sound level measurements were performed continuously from June 13 to 16, 2023, as described in the ambient noise study provided as Appendix 4.13-A.[2] The long-term far-field sound level meters were set up at measurement locations labeled long-term (LT) 01, LT02, LT03, and LT04, as shown on Figure 4.13-1. The measurement locations were selected because they were representative of the existing sound levels and provided the ability to secure the equipment for unattended operation.

The area surrounding the proposed Project site is rural residential, with active farms and sparsely distributed homes. While onsite conducting the ambient noise study, field staff witnessed light vehicular traffic on local streets, active farm equipment), and propeller planes flying overhead. Other noise sources included birds, rustling leaves, and distant farm animals.

Field staff recorded weather conditions during the noise measurements. At the time of these measurements, conditions in the Project vicinity consisted of clear skies, with temperatures around 81 degrees Fahrenheit, wind speeds between 3 and 7 miles per hour, and relative humidity ranging from 52 to 53 percent.

[1] Appendix B (g) (1), (g) (4) (b)
[2] Appendix B (g) (4) (b)

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.13-1 Noise-Sensitive Receivers and Measurement Locations

Solano County, CA



Noise-Sensitive Receiver

Long-Term Monitor (LT)

Proposed Features

Project Site

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:8,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Table 4.13-4. Noise Survey Weather Conditions

Date	Temperature (°F)			Relative Humidity (%)			Wind Speed (mph)		
	Min	Average	Max	Min	Average	Max	Min	Average	Max
6/13/2023	61.3	73.0	79.2	48	56	72	0.7	5.7	14.0
6/14/2023	54.7	69.5	84.6	43	64	86	0.4	2.1	10.3
6/15/2023	55.4	71.6	86.7	34	60	86	0.0	2.6	10.1
6/16/2023	56.5	60.9	72.5	54	75	83	0.4	2.2	5.6

Table 4.13-5 shows the existing Community Noise Equivalent Level (CNEL) for the Project area that was calculated for each measurement location. The results of the ambient noise measurements reported in hourly averages and statistical metrics are presented in Appendix B of the ambient noise study (Appendix 4.13-A).

Table 4.13-5. Existing Ambient Sound Levels

Measurement Location	Measured Average Daytime L_{eq}	Measured Average Evening L_{eq}	Measured Average Nighttime L_{eq}	Calculated CNEL[1/]	Calculated L_{dn}[2/]	Quietest 4-Hour L_{90} Average
LT01	52	54	56	62	62	44
LT02	57	55	57	63	63	42
LT03	61	59	59	65	65	43
LT04	64	63	62	69	68	44

1/ Includes a 5-dB penalty for evening hours and a 10-dB penalty for nighttime hours.
2/ Includes a 10-dB penalty for nighttime hours with no evening hour penalty.

4.13.3 Environmental Analysis[3, 4]

Noise will be produced at the site during both construction and operation of the Project. Potential noise impacts from construction and operation activities are assessed in this subsection.

4.13.3.1 Construction Impacts

The noise levels generated by the Project were estimated for each stage of construction (Appendix 4.13-A). Noise levels for each piece of construction equipment were used to calculate the hourly A-weighted L_{eq} sound level and corresponding 24-hour day-night average sound level (L_{dn}) depending on the hours of construction. The frequency at which each piece of equipment operates at full power was estimated with daily usage factors.

Hourly L_{eq} sound levels for each construction stage were estimated at the nearest receiver, Rec01, located approximately 1,200 feet away from the center of the Project site. The center of the Project site was used to model the construction impacts since construction equipment is commonly located throughout the entire area of the Project site for varying durations. Construction sound levels were modeled to be 7:00 a.m. to 5:00 p.m. as a conservative scenario.

[3] Appendix B (g) (1)
[4] Appendix B (g) (4) (D)

Typical construction stages and associated equipment were estimated for the Project. The actual Project construction schedule and equipment use may vary but are not anticipated to exceed this worst-case scenario. Table 4.13-6 provides a summary for each stage including an equipment list, hourly L_{eq} at 50 feet from the Project, and the hourly L_{eq} at the nearest receiver, Rec01.

Table 4.13-6. Estimated Construction Noise by Stage at Nearest Receiver, dBA

Stage	Equipment	Hourly L_{eq} at 50 feet	Nearest Receiver and Distance	Hourly L_{eq} at Nearest Receiver
Site Preparation	Loader (2), Tractor (1)	82	Rec01 (1,200 feet)	55
Grading	Compactor (1), Loader (2), Grader (2), Roller (1), Tractor (1), Water Truck (1)	86	Rec01 (1,200 feet)	59
Battery/Container Installation	Compactor (2), Compressor (4), Crane (2), Excavator (2), Forklift (1), Loader (2), Generator (2), Tractor (2)	90	Rec01 (1,200 feet)	62
Gen-tie Site Prep (Orchard Removal)	Dozer (1), Excavator (2), Stump Grinder (1)	86	Rec01 (1,200 feet)	59
Substation Installation	Bore/Drill Rig (1), Compressor (1), Crane (1), Dozer (1), Excavator (1), Forklift (1), Generator (1), Loader (1), Aerial Man Lift (4), Roller (1), Trencher (2), Tractor (1)	90	Rec01 (1,200 feet)	62
Gen-tie Foundations, Tower Erection, and Underground Installation	Bore/Drill Rig (1), Compressor (2), Crane (1), Excavator (1), Forklift (1), Pumps (2), Water Truck (1), Welder (2)	87	Rec01 (1,200 feet)	59
Gen-tie Stringing and Pulling	Aerial Man Lift (2), Tractor (2)	83	Rec01 (1,200 feet)	56

L_{eq} = equivalent sound level

To determine the ambient sound level increase at the nearest receiver, the worst-case construction scenarios for the Project construction were calculated using L_{dn}. The worst-case sound exposure for the Project construction is expected to occur while the Battery/Container Installation, Substation Installation, and Gen-tie Installation stages are occurring simultaneously. All construction equipment for each stage was assumed to be onsite and operational during the duration of the construction day, as a conservative assumption. Project construction hours for all heavy machinery equipment were assumed to be from 7:00 a.m. to 5:00 p.m. Other construction activities not involving significant sound exposure may occur outside these hours without increasing the calculated worst-case averages. Table 4.13-7 provides the worst-case ambient sound level increase over the existing ambient noise at the nearest noise-sensitive receiver.

Table 4.13-7. Estimated Increase to Ambient Sound Levels due to Worst-Case Construction Noise, L_{dn}, dBA

Worst-Case Scenario Construction Phase	Nearest Receiver and Distance	Individual Phase[1/]	Combined Worst-Case Scenario	Existing Ambient[2/]	Existing Ambient + Worst-Case[3/]	Potential Increase to Ambient
Substation Installation	Rec01 (1,200 feet)	58	62	62	65	3
Battery/Container Installation	Rec01 (1,200 feet)	58				
Gen-Tie Installation	Rec01 (1,200 feet)	55				

1/ Construction hours for all heavy machinery equipment were modeled from 7:00 a.m. to 5:00 p.m. Other construction activities not involving significant sound exposure may occur outside these hours without increasing the calculated worst-case averages.
2/ Calculated L_{dn} at LT01 was 62 dBA.
3/ Logarithmic addition of the loudest phase sound levels and the existing ambient sound levels.

As shown in Table 4.13-7, Rec01 is expected to see a 3-dBA increase in ambient L_{dn} sound level during the simultaneous Substation Installation, Battery/Container Installation, and Gen-Tie Installation stages, which is not considered to be significant. The Project is also expected to meet the Solano County General Plan construction sound level limit of 65 dBA L_{dn} at residential land uses. Note that since L_{dn} is a 24-hour average, there may be single events within those 24 hours where sound levels emitted from construction equipment may cause short-term noise increases. Sound levels may vary from results depending on the sources' proximity to noise-sensitive receivers on the site.

4.13.3.2 Construction Vibration Impacts

Vibration levels for activities associated with Project construction were based on the average of PPV inches/second source levels published with the FTA Noise and Vibration Manual (FTA 2018), which documents several types of construction equipment measured under a wide variety of construction activities.

The threshold for human perception and annoyance of groundborne vibration is well below the threshold of damage for normal buildings. Vibration levels above a maximum PPV of 0.01 inch/second are considered to be where human perception and annoyance may start to occur. A significant impact is defined as a vibration source exceeding a PPV of 0.01 inch/second for occupied receivers. The maximum vibration levels are expected during the grading stage. Table 4.13-8 provides the maximum PPV in inches/second for the grading construction stage at Rec01.

Table 4.13-8. Estimated Worst-Case Vibration at Nearest Receiver

Worst-Case Scenario Construction Stage	Nearest Receiver and Distance	Maximum PPV (inch/second)
Grading	Rec01 (1,200 feet)	0.003

Vibration levels at Rec01 are not anticipated to exceed the maximum PPV of 0.01 inch/second. Vibration levels may vary from results on the sources' proximity to sensitive receptors. After construction is complete, the Project is not expected to have any vibration impact while operational.

The only significant source of vibration resulting from the Project will occur during construction. Vibration levels have been analyzed and are not expected to be disturbing for human perception thresholds or detrimental to nearby structures throughout the duration of construction. Once

construction is completed, the Project is not expected to have any significant operational vibration. The Project as a whole is considered to have a less than significant impact to excessive groundborne vibration or groundborne noise levels.

4.13.3.3 Operational Impacts[5]

Predicted levels at the closest sensitive receptors were calculated using industry-accepted sound modeling software, Computer Aided Noise Abatement (CadnaA). The model calculates sound propagation based on ISO 9613-2:1996, General Method of Calculation. ISO 9613-2 assesses the sound level propagation based on the octave band center-frequency range from 31.5 to 8,000 Hz. The atmospheric conditions were assumed to be calm, and the temperature and relative humidity were left at the program default values. Onsite ground absorption was set to 0.3 to account for gravel and offsite ground absorption was set to 1.0 to account for the soft ground cover of the surrounding agricultural land.

The main source of operational noise will be the stationary inverters; heating, ventilation, and air conditioning (HVAC) equipment; and transformers. The Power Electronics GEN3 inverter was provided to be 73 dBA at 8 meters. The Ener C+ battery containers were specified to be 82 dBA at 1 meter based on manufacturer testing. Specified sound levels were provided by the manufacturers for each substation transformer. Table 4.13-9 provides the sound power levels for each modeled piece of equipment. For each piece of modeled equipment, a sound level spectrum was provided by the manufacturer or referenced from equipment of similar size and scope to accurately reflect the frequency characteristics for each source.

Table 4.13-9. Modeled Sources Sound Power Levels

Equipment	Number of Sources Modeled	Modeled Sound Pressure Level	Modeled Sound Power Level
Power Electronics GEN3 Inverter	136	73 dBA at 8 meters	102 dBA
CATL Ener C+ Battery Container HVAC	544	82 dBA at 1 meter	93 dBA
170-MVA Substation Transformer	2	72 dBA at 1 meter	90 dBA
85-MVA Substation Transformer	1	69 dBA at 1 meter	87 dBA
Auxiliary Transformers	17	65 dBA at 1 meter	79 dBA

Notes: dBA = A-weighted decibels; HAVAC = heating, ventilation, and air conditioning; MVA = megavolt-ampere

There are three chief noise sources associated with a transformer: core noise, load noise, and noise generated by the operation of the cooling equipment. The core is the principal noise source and does not vary significantly with electrical load. The load noise is primarily caused by the load current in the transformer's conducting coils (or windings), and consequently, the main frequency of this sound is twice the supply frequency: 120 Hz for 60 Hz transformers. The cooling equipment (fans and pumps) may also be an important noise component, depending on fan design. During air-forced cooling

[5] Appendix B (g) (4) (C), (g) (4) D), (g) (4) (E), (g) (4) (F)

method, cooling fan noise is produced in addition to the core noise. The resulting audible sound is a combination of hum and the broadband fan noise.

A sound barrier was designed on the north side of the Project. The sound barrier was modeled to be 15 feet in height. The barrier will have a mass density of at least 4 pounds per square foot (lb/ft^2) or a minimum Sound Transmission Class (STC) of STC-27 with no cracks or gaps. The barrier was modeled to be reflective. The sound barrier was designed in conjunction with preliminary equipment sound level assumptions. The sound barrier location is provided in Figure 2-1 in Section 2.0, *Project Description,* and Figure C-2 of the Sound Assessment Study (Appendix 4.13-B).

Model Results

The noise model predicted Project sound levels at the six noise-sensitive receivers in the surrounding community. The predicted sound levels were compared to the Solano County General Plan nighttime sound level limit of 50 dBA at each receiver location. The modeled A-weighted hourly L_{eq} sound levels for each receiver and the applicable regulatory limits are provided in Table 4.13-10.

Table 4.13-10. Operational Sound Levels Compared to County Code, dBA L_{eq}

Receiver	Modeled Sound Level (dBA)	Solano County Code Limit (dBA)
Rec01	50	50
Rec02	49	50
Rec03	44	50
Rec04	47	50
Rec05	46	50
Rec06	43	50

Table 4.13-10 shows that Project operational sound levels at all noise-sensitive receivers are predicted to be in compliance with the Solano County General Plan nighttime sound level guidance of 50 dBA. The Project operational sound level is also in compliance with Solano County Code limit of 65 dBA at the property line, as depicted in Figure C-2 and Figure C-3 of Appendix 4.13-B.

An increase-to-ambient analysis was conducted for Project operational sound levels. Per CEC guidance, Project increase to ambient sound levels were calculated using the quietest 4 hours of the measured L_{90} sound levels in Table 4.13-11.

Table 4.13-11. Estimated Increase to Ambient from Project Operations

Receiver	Modeled Sound Level (dBA)	Quietest 4-Hour L_{90} Average (dBA))	Project + Ambient (dBA)	Estimated Increase to Ambient (dBA)
Rec01	50	44	51	7
Rec02	49	43	50	7
Rec03	44	42	46	4
Rec04	47	44	49	5
Rec05	46	44	48	4
Rec06	43	44	47	3

Table 4.13-11 shows that the Project has the potential to increase the quietest nighttime sound levels by 3 to 7 dBA. The Project model assumes that every piece of sound-emitting equipment is operating at full load for the highest ambient temperatures and compared to the quietest 4-hour timeframe in the middle of the night. It is unlikely this scenario would occur because full load operations at battery energy storage system facilities typically occur during the morning and early evening time periods. Additionally, the highest ambient temperatures will not occur at night, which adds to the conservatism of this analysis. The typical nighttime sound level is expected to be lower than the modeled worst-case operational sound levels. This is further exemplified as Table 4.13-5 shows average daytime, evening, and nighttime ambient levels that are higher than the modeled worst-case operational sound levels; therefore, the Project is expected to have a less than significant impact.

Transmission Line Audible Noise

Empirical equations have been developed by the Bonneville Power Administration (BPA) for calculating audible noise from alternating current transmission lines. These equations were used to estimate the audible noise generated by the new transmission lines. The calculation estimates total noise based on data from actual field surveys and laboratory tests. The surveys measured total noise from a variety of transmission lines and conductor combinations. The measured transmission line noise includes both the low frequency hum and corona noise. Therefore, the predictions account for all transmission line–generated audible noise.

Based on the BPA equations for calculating audible noise during rainy weather, the noise generated by the transmission lines at the edge of the right-of-way is not expected to exceed 44 dBA for the Applicant portion and not to exceed 28 dBA for the Pacific Gas and Electric (PG&E) portion of the 230-kV transmission line. The noise generated by the transmission lines during foul weather could potentially be drowned out due to the sound of the rain or wind once outside the right-of-way. Transmission line noise during fair weather conditions will be far less.

4.13.3.4 Worker Exposure to Noise[6]

Construction sound levels onsite are expected to exceed 85 dBA and hearing protection should be worn at all times within the project boundary in accordance with U.S. Department of Labor, Occupational Safety and Health Administration (OSHA) guidelines.

4.13.3.5 CEQA Impact Analysis

IMPACT 4.13-1: 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? (Less Than Significant Impact)

Construction

The Sound Assessment Study (Appendix 4.13-B) estimated the noise levels generated by the Project during each stage of construction and is discussed above in Section 4.13.3.1. Noise levels for each

[6] Appendix B (g) (4) (E)

piece of construction equipment were used to calculate the average hourly A-weighted sound level and corresponding 24-hour L_{dn} depending on the hours of construction. The frequency at which each piece of equipment operates at full power was estimated with daily usage factors.

The worst-case sound exposure for the Project construction is expected to occur while the Battery/Container Installation, Substation Installation, and Gen-tie Foundations stages are occurring simultaneously. This combined worst-case scenario will result in a receiver noise level of 62 dBA L_{dn} at the nearest receiver, Rec01, and is expected to see approximately a 3-dB increase to the ambient environment during this loudest sound exposure phase. The Project will meet the Solano County General Plan construction sound level limit of 65 dBA L_{dn} at residential land uses. Due to these factors, noise from construction will result in a less than significant impact.

Operation

As discussed in above in Section 4.13.3.3, the Project was modeled using industry-accepted sound modeling software and compared to the applicable regulations. The noise model predicted Project sound levels at the six noise-sensitive receivers in the surrounding community. Sound level contours detail the propagation of sound level from Project sources to surrounding noise-sensitive receivers and are provided in Appendix 4.13-B. The predicted sound levels were shown to comply with the Solano County General Plan limit of 50 dBA and the Solano County Code limit of 65 dBA.

An increase-to-ambient analysis was conducted for the Project operational sound levels. Per CEC guidance, Project increases to ambient sound levels were calculated using the quietest 4 hours of the measured L_{90} sound levels in Table 4.13-11. The Project has the potential to increase the quietest nighttime sound levels by 3 to 7 dBA. The Project model assumes that every piece of sound-emitting equipment is operating at full load for the highest ambient temperatures and compared to the quietest 4-hour timeframe in the middle of the night. It is unlikely this scenario would happen due to both the typical full load operations of the facility occurring during the morning and early evening time periods and the rarity of the highest ambient temperatures occurring at night. The typical nighttime sound level is expected to be lower than the modeled worst-case operational sound levels. This is further exemplified as Table 4.13-5 shows average daytime, evening, and nighttime ambient levels that are higher than the modeled worst-case operational sound levels; therefore, the Project is expected to have a less than significant impact.

IMPACT 4.13-2: Would the project result in generation of excessive groundborne vibration or groundborne noise levels? (Less than Significant Impact)

As discussed in Section 4.13.2.2, vibration levels for activities associated with Project construction were based on the average of PPV source levels published with the FTA Noise and Vibration Manual (FTA 2018), which documents several types of construction equipment measured under a wide variety of construction activities. Vibration levels for decommissioning are anticipated to be similar to those for construction. After construction is complete, the Project is not expected to have any vibration impact while operational. The Project as a whole is considered to have a less than significant impact to excessive groundborne vibration or groundborne noise levels.

IMPACT 4.13-3: For a project 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? (No impact)

The Project is not within 2 miles of a public airport or public use airport or in the vicinity of a private airstrip or an airport land use plan. There will be no impact.

4.13.3.6 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the point of change in ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay for interconnection of the Project at the Vaca-Dixon Substation, as shown in Figure 1-3 of Section 1, *Executive Summary*. The PG&E facilities are described in further detail in Section 3.0, *Electrical Transmission*.

The New Corby Bay will only include the installation of a new circuit breaker and will not include the installation of any new transformers. Under normal operations, circuit breakers are not a significant source of noise. Due to this, the substation modifications are not expected to generate a significant increase to ambient noise compared to the larger PG&E Vaca-Dixon Substation and adjacent Interstate 80 noise sources. A description of noise resulting from the new gen-tie is given in Section 4.13.3.3 above. Noise levels from the PG&E portion of the gen-tie will be consistent with the Applicant constructed portion.

4.13.4 Cumulative Effects[7]

Cumulative impacts should consider the effects of existing, current, and reasonably foreseeable future projects. As noted above, the proposed Project complies with all applicable regulations and will not significantly increase the ambient community noise level. The worst-case operational L_{dn} from the Project will be 56 dBA. This level is below the Solano County General Plan development standards shown in Table 4.13-12 below. Any existing or future Projects will also be required to be below these development standards. Considering this, the cumulative effects resulting from the Project are less than significant.

4.13.5 Mitigation Measures[8]

No mitigation measures are proposed because the Project incorporates the following Project Design Measure into the design of the Project.

[7] Appendix B (g) (1)
[8] Appendix B (g) (1)

PD Noise-1: To ensure that operational noise impacts are less than significant, the Project will include a sound barrier on the north side of the Project. The sound barrier will be 15 feet in height and will have a mass density of at least 4 lb/ft^2 or a minimum STC of STC-27 with no cracks or gaps.

4.13.6 Laws, Ordinances, Regulations, and Standards

4.13.6.1 Federal

Federal Transit Administration and Federal Railroad Administration Standards

Although the FTA standards are intended for federally funded mass transit projects, the impact assessment procedures and criteria included in FTA (2018) routinely are used for projects under review by local jurisdictions that have not adopted their own vibration impact standards. The FTA and Federal Railroad Administration have published guidelines for assessing the impacts of groundborne vibration associated with rail projects, which have been applied by other jurisdictions to other types of projects. The FTA's threshold of architectural damage for conventional sensitive structures from groundborne vibration is measured as 0.2 inch/second PPV or 94 vibration decibel (VdB) (decibel units of 1 micro inch/second). The FTA measure of human annoyance at residential uses is 72 VdB for "Frequent Events," or fewer than 70 vibration events of the same kind per day.

Occupational Safety and Health Act

Under the Occupational Safety and Health Act of 1970 (29 United States Code [U.S.C.] §651 et seq.), OSHA adopted regulations (29 Code of Federal Regulations [CFR] §910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list limits on noise exposure levels as a function of the amount of time during which the worker is exposed. The regulations further specify requirements for a hearing conservation program (§1910.95(c)), a monitoring program (§1910.95(d)), an audiometric testing program (§1910.95(g)), and hearing protection (§1910.95(i)). There are no federal laws governing community noise.

Although no federal noise regulations exist, the United States Environmental Protection Agency (USEPA) has published noise guidelines (USEPA 1974). The USEPA guidelines recommend a day/night noise level of 55 dBA to protect the public from the effect of broadband environmental noise outdoors in residential areas and farms, and other outdoor areas where people spend widely varying amounts of time, and other places in which quiet is a basis for use (USEPA 1974).

4.13.6.2 State

Government Code Section 65302 encourages counties and cities to implement a noise element as part of the general plan. In addition, the California Governor's Office of Planning and Research has developed guidelines for preparing noise elements, which include recommendations for evaluating the compatibility of various land uses as a function of community noise exposure.

The California OSHA has published Occupational Noise Exposure Regulations (9 California Code of Regulations [CCR] §§5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards described above.

Following the CEQA guidelines (CCR, Title 14, Appendix G, Section XI), the Project would cause a significant impact if it would result in the following:

- Generation of 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 in other applicable local, state, or federal standards;
- Exposure of people to excessive ground-borne noise levels or vibration; or
- 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 2 miles of a public airport or public use airport, exposure to people residing or working in the project area to excessive noise levels.

The CEQA Statutes and Guidelines Appendix G thresholds do not define the term "substantial"; however, the CEC provides guidelines for operational noise or permanent increases that indicate an increase of 5 dBA over ambient conditions may be significant and an increase of 10 dBA is significant (CEC 2010).

4.13.6.3 Local

Solano County Code

Solano County Code Chapter 28.70.10(B)(1)(b) regulates noise to 65 dBA at any property line.

Solano County General Plan

Daytime noise standards are typically set at noise levels that would not annoy or impede human interaction or function in outdoor activity areas. Nighttime noise standards are typically set to result in acceptable noise levels that would not interfere with sleep for most people inside a building with windows closed. In general, noise standards are designed to prevent annoyance or sleep disruption in sensitive members of the public. Table 4.13-12 shows the acceptable noise levels for various land use categories, and is used when determining a proposed project's noise impact.

Table 4.13-12. Solano County General Plan – Land Use Noise Compatibility Guidelines

Receiver	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Residential-Low Density Single Family, Duplex, Mobile Home	<60	55-70	70-75	75+
Residential-Multifamily	<65	60-70	70-75	75+
Transient Lodging-Motel, Hotel	<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+

Receiver	Community Noise Exposure (L_{dn} or CNEL, dBA)			
	Normally Acceptable[1]	Conditionally Acceptable[2]	Normally Unacceptable[3]	Clearly Unacceptable[4]
Office Building, Business Commercial, and Professional	<70	67.5-77.5	75+	--
Industrial, Manufacturing, Utilities, Agriculture	<75	70-80	75+	--

Notes: CNEL = community noise equivalent level; dBA = A-weighted decibel; L_{dn} = day-night average noise level
1/ 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/ 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 w ith 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.
5/ These standards are not applicable for development within the airport compatibility review area. Development in the airport compatibility review areas are subject to standards in the applicable airport land use plan.

Table 4.13-13 defines noise performance standards for non-transportation noise sources that apply to Project operation.

Table 4.13-13. Solano County General Plan – Non-transportation Noise Standards, Average (dBA L_{eq})/Maximum (dBA L_{max})[1/]

Receiver	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/
Hospital 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 = Highest root-mean-square sound level measured over a given period of time.
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 utilized during nighttime hours

As shown above in Table 4.13-13, the applicable Solano County General Plan noise limits are 55 dBA L_{eq} for the daytime and 50 dBA L_{eq} for the nighttime. In addition, the Solano County General Plan requires construction to comply with the performance standards in Table 4.13-14, which applies a 65 dBA L_{dn} limit for construction noise at all residential land uses.

Table 4.13-14. Solano County General Plan – Transportation and Construction Noise Performance Standards

New Land Use	Sensitive Outdoor Area (dBA L_{dn})
All Residential	65
Transient Lodging	65
Hospital and Nursing Homes	65
Theaters and Auditoriums	--
Churches, Meeting Halls, Schools, Libraries, etc.	65
Office Buildings	65
Commercial Buildings	--
Playgrounds, Parks, etc.	70
Industry	65

The Solano County General Plan Chapter 5 Public Health and Safety contains the following policies and implementation programs applicable to the Project:

Policy HS.P-48 *Consider and promote land use compatibility between noise-sensitive and noise-generating land uses when reviewing new development proposals.*

Policy HS.P-49 *Encourage design that minimizes negative effects of noise without compromising aesthetic values and pedestrian and auto connectivity.*

Policy HS.P-52 *Minimize noise conflicts between current and proposed land uses and transportation networks by encouraging compatible land uses around critical areas with higher noise potential.*

Implementation Program HS.I-62 *When reviewing new developments proposals:*

- *Require noise abatement measures to ensure that noise levels will not exceed those indicated in Table 4.13-12 and Table 4.13-14.*[9]
- *Require buffering between noise-sensitive land uses and noise sources unless a detailed noise analysis is conducted and noise abatement measures can be take to reduce noise to acceptable levels as shown on Table 4.13-12 and Table 4.13-14.*
- *Where development projects produce, or are affected by, nontransportation-related noise, require the inclusion of project feasters that will enable the project to achieve acceptable levels specified in Table 4.13-14, as measured at outdoor activity areas of existing and planned noise-sensitive land uses.*

[9] Note: Table numbering here has been revised to refer to the tables in this section of the Application, which are reproductions of tables from the General Plan.

- *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 4.13-14. The total noise level resulting from new sources and ambient noise shall not exceed the standards in Table 4.13-14, as measured at outdoor activity areas of any affected noise sensitive land use except:*
    - *If the ambient noise level exceeds the standard in Table 4.13-14, the standard becomes the ambient level plus 5 dB.*
    - *Reduce the applicable standards in Table 4.13-14 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 appropriate noise abatement measures will be required for all discretionary projects where any of the following conditions apply:*
        - *The Project is located within the existing or future 60 dB CNEL transportation noise contours as measured at outdoor activity area 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 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 4.13-14 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 levels reduction measures have been implemented.*

Implementation Program HS.I-64 *Promote the use of berms, landscaping, setbacks, or architectural design for noise abatement, in addition to conventional wall barriers, to enhance aesthetics and minimize pedestrian barriers. Development of noise-sensitive land uses in areas exposed to existing or projected levels of noise from transportation, stationary sources, or agricultural operations exceeding, or estimated to exceed, levels specified in Table 4.13-12 shall require transportation planning, traffic calming, site planning, buffering, sound insulation, or other methods to reduce noise exposure in outdoor activity areas an interior spaces to the levels specified in Table 4.13-12.*

Implementation Program HS.I-66: *Locate industrial and other noise-generating land uses away from noise-sensitive land uses and/or require substantial noise sources to be completely enclosed within buildings or structures.*

Solano County Draft Final Noise Ordinance

A Draft Final Noise Ordinance from 2017 can be found on the Solano County website (Solano County 2017); however, it is unclear if it is codified and applicable to the Project. Without verification of the validity of the ordinance, the Solano County Noise Ordinance was not incorporated within this assessment.

Solano County Noise Ordinance Section 28.1-50 provides numeric sound limits and time restrictions for construction noise. Section 28.1-50(a)(1) provides time restrictions for construction noise in specific areas:

> *(1) Construction and demolition activities within a residential district or within a radius of 500 feet are allowed only during the times specified in Table 28.1-50.*

Table 28.1-50 was recreated as Table 4.13-15 below.

Table 4.13-15. Time Limits for Noise Associated with Commercial Construction Activities

Day of Week	Time Frame
Monday - Friday	7:00 a.m. – 6:00 p.m.
Saturday	8:00 a.m. – 5:00 p.m.
Sunday	Not allowed
Federal Holidays	Not allowed

Source: Solano County Draft Noise Ordinance, Table 28.1-50 (Solano County 2017)

Section 28.1-50(1)(2) defines the numeric sound limits to not exceed, applicable to Project construction:

> *a. The noise level to exceed the noise standards specified in Table 28.1-40 of this chapter, for the land use where the measurement is taken, plus 20 dBA, for a period of more than 2 minutes, or*
>
> *b. A maximum noise at the receiving property line of more than 90 dBA at any time*

Table 28.1-40 was recreated as Table 4.13-16 below.

Table 4.13-16. Noise Levels Permissible by Receiving Land Use, dBA

Zone	7:00 a.m. - 7:00 p.m.	7:00 p.m. - 7:00 a.m.
Agricultural	55 dBA	50 dBA
Residential	55 dBA	50 dBA

Source: Solano County Draft Noise Ordinance, Table 28.1-40 (Solano County 2017)

Daytime noise standards are typically set at noise levels that would not annoy or impede human interaction or function in outdoor activity areas.

Section 28.1-50(1)(3) defines additional construction time restrictions:

> *(3) Any construction that exceeds noise levels established in Sections 28.1-30 or 28.1-40 shall occur between the hours of 9:00 AM and 4:00 PM, Monday through Friday.*

City of Vacaville General Plan

The City of Vacaville General Plan, Noise Element, includes the following goals, policies, and actions that are relevant to the gen-tie line, and specifically in relation to noise. Refer also to Section 4.11, *Land Use and Planning*, of this application for additional information regarding land use consistency, and for a consistency analysis with applicable City General Plan goals, policies, and actions as related to noise.

> ***Goal NOI-4:*** *Minimize noise from stationary sources.*
>
> ***Policy NOI-P4.1****: Preclude the generation of annoying or harmful noise through conditions of approval on stationary noise sources, such as construction and property maintenance activity and mechanical equipment.*
>
> ***Policy NOI-P4.2****: Require the following construction noise control measures:*
>
> - *Equip all internal combustion engine-driven equipment with intake and exhaust mufflers that are in good condition and appropriate for the equipment.*
> - *Locate stationary noise-generating equipment as far as possible from sensitive receptors when sensitive receptors adjoin or are near a construction area.*
> - *Utilize "quiet" air compressors and other stationary noise sources where technology exists.*

Limit hours of operation of outdoor noise sources through conditions of approval

LORS Summary

Table 4.13-17 presents the LORS that apply to noise.

Table 4.13-17. Laws, Ordinances, Regulations, and Standards (LORS) for Noise[10]

LORS	Requirements/Applicability
Federal	
USEPA	Guidelines for state and local governments.
FTA	Guidelines for state and local governments.
OSHA	Exposure of workers over 8-hour shift limited to 90 dBA.
State	
California Government Code Section 65302	Requires local government to prepare plans that contain noise provisions.
Cal-OSHA, 8 CCR Article 105 Sections 095 et seq.	Exposure of workers over 8-hour shift limited to 90 dBA.
CEQA	Statutes and Guidelines applicable to the Project.
Local	
Solano County General Plan	The General Plan provides quantitative compatibility goals and policy.
City of Vacaville General Plan	The General Plan provides quantitative compatibility goals and policy.
Solano County Code	The County Code includes quantitative limits on allowable noise for various receptor land uses.

[10] Appendix B (i) (1) (A), (i) (1) (B)

4.13.7 Agencies and Agency Contacts[11]

No agencies were contacted regarding noise.

4.13.8 Required Permits and Permit Schedule[12]

No permits are required; therefore, there is no permit schedule.

4.13.9 References

California Department of Transportation. 2013. Technical Noise Supplement to the Traffic Noise Analysis Protocol. September.

CEC (California Energy Commission). 2010. Calico Solar Power Project Commission Decision, CEC800-2010-012-CMF. Sacramento, California.

FTA (Federal Transit Authority). 2018. *Transit Noise and Vibration Impact Assessment Manual.* FTA Report No. 0123. Prepared by John A. Volpe National Transportation Systems Center. September.

Solano County. 2017. *Draft Final Solano County Noise Ordinance.* County Code Chapter 28.1. Available online at: https://www.solanocounty.com/civica/filebank/blobdload.asp?BlobID=26267 (accessed August 2024).

USEPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. Office of Noise Abatement and Control. March.

[11] Appendix B (i) (2)
[12] Appendix B (i) (3)

4.14 Population/Housing

This section identifies and evaluates issues related to population and housing in the context of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment including an estimation of the net positive economic benefit economic benefits as directed by Public Resources Code Section 25545.9.

4.14.1 CEQA Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:					
1.	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)?			X	
2.	Displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere?				X

4.14.2 Affected Environment[1] [2] [3]

4.14.2.1 Population[4]

The Project site is located in unincorporated Solano County, near the city of Vacaville. The generation tie (gen-tie) line is partially located within the city of Vacaville municipal boundary. The study area for population and housing consists of Solano County. Solano County had a total estimated population of 446,426 in 2024 (Table 4.14-1). The county includes seven incorporated cities, which together account for slightly more than 95 percent of the total county population. The city of Vallejo is the largest city with an estimated population of 121,558 in 2024, approximately 27 percent of the county total. Vacaville, the closest city to the Project site, is the third largest city in the county, with an estimated population of 102,173 in 2024 (California Department of Finance [DOF] 2024a, Table 4.14-1).

Population increased in Vacaville, Solano County, and California from 2010 to 2020. Annual growth rates were higher than the statewide average in Vacaville and Solano County over this period, 1.0 percent and 0.9 percent, respectively, compared to the statewide average of 0.6 percent. More recently, population dropped in all three areas from 2020 to 2024, with annual rates of change of -0.1 percent (Vacaville), -0.4 percent (Solano County), and -0.3 percent (California) (Table 4.14-1).

[1] Appendix B (g) (1)
[2] Appendix B (g) (7) (A)
[3] Appendix B (g) (7) (A) (vi)
[4] Appendix B (g) (7) (A) (ii)

Table 4.14-1. Population, 2010, 2020, and 2024

Area	2010	2020	2024	2010 to 2020		2020 to 2024	
				Net Change	Annual Growth Rate	Net Change	Annual Growth Rate
City of Vacaville	92,428	102,386	102,173	9,958	1.0%	-213	-0.1%
Solano County	413,344	453,491	446,426	40,147	0.9%	-7,065	-0.4%
California	**37,253,956**	**39,538,223**	**39,128,162**	**2,284,267**	0.6%	**-410,061**	-0.3%

Sources: California DOF (2024a), U.S. Census Bureau (2024a)

Population projections for Solano County and the state as a whole are presented in Tables 4.14-2 and 4.14-3. The population of Solano County is projected to increase by more than one-third (38 percent) from 2020 to 2060, increasing by almost 175,000 people. Statewide, population over the same period is projected to increase by 5 percent. Annual growth rates by decade for Solano County range from 0.2 percent (2020 to 2030) to 1.2 percent (2030 to 2040). Statewide, the annual growth rate would be negative from 2050 to 2060, with the highest annual growth rate (0.3 percent) projected for 2030 to 2040 (Table 4.14-3).

Table 4.14-2. Population Projections, 2030 to 2060

Area	2020[1/]	2030	2040	2050	2060
Solano County	452,943	462,035	522,265	577,094	625,665
California	**39,541,722**	**39,694,960**	**40,914,063**	**41,655,829**	**41,638,357**

Note:
1/ Values for 2020 used in the projections are annual estimates not the 2020 Census counts reported in Table 4.14-1.
Source: California DOF 2024b

Table 4.14-3. Population Projections, Decade by Decade, 2030 to 2060

Area	2020 to 2030		2030 to 2040		2040 to 2050		2050 to 2060	
	Net Change	Annual Growth Rate	Net Change	Annual Growth Rate	Net Change	Annual Growth Rate	Net Change	Annual Growth Rate
Solano County	9,092	0.2%	60,230	1.2%	54,829	1.0%	48,571	0.8%
California	**153,238**	**0.0%**	**1,219,103**	**0.3%**	**741,766**	**0.2%**	**-17,472**	**0.0%**

Source: California DOF 2024b

4.14.2.2 Housing

Housing resources are summarized for Solano County and the city of Vacaville in Table 4.14-4. The data presented in this table are annual estimates for 2022 prepared by the U.S. Census Bureau using 5 years of data (2018 to 2022) from the American Community Survey (U.S. Census Bureau 2024b, 2024c). The U.S. Census Bureau defines a housing unit as a house, apartment, mobile home or trailer, group of rooms, or single room occupied or intended to be occupied as separate living quarters. There were an estimated 162,513 units in Solano County in 2022, with the city of Vacaville accounting for 22 percent (35,518 units) of this total. These estimates indicated that an estimated 1,805 housing units were available for rent in Solano County, with 322 units available in Vacaville, the nearest community to the Project. Rental vacancy rates in both areas were below the state average, 3.0 percent (Solano County) and 2.7 percent (Vacaville) compared to 4.0 percent statewide. An estimated 992 and 213 units for seasonal, recreational, or occasional use were identified in Solano County and Vacaville,

respectively. Homes for seasonal, recreational, or occasional use are generally considered to be vacation homes.

Rental housing options may also include other special living situations, such as Airbnb units and spare bedrooms in homes that residents would be willing to rent to construction workers. These types of potential housing opportunities are not included in the data presented in Table 4.14-4.

Table 4.14-4. 2022 Housing Data Estimates[5]

Geographic Area[1/]	Total Housing Units	Total Rental Units	Rental Vacancy Rate (Percent)	Units Available for Rent	For Seasonal, Recreational, or Occasional Use[2/]
Solano County	**162,513**	**59,476**	**3.0%**	**1,805**	**992**
City of Vacaville	35,518	11,767	2.7%	322	213
State of California	**14,424,442**	**6,209,124**	**4.0%**	**250,250**	**364,195**

Notes:
1/ All data are from the American Community Survey 5-year estimates for 2015-2019.
2/ Housing units for seasonal, recreational, or occasional use are generally considered to be vacation homes. They are not included in the estimated number of housing units available for rent.
Source: U.S. Census Bureau 2024b, 2024c

Temporary housing is also available in the form of hotel and motel rooms, with additional options provided by campgrounds and recreational vehicle (RV) parks.

4.14.2.3 Economy and Employment[6] [7]

Employment estimates are provided for Solano County for 2013 and 2022 in Table 4.14-5. From 2013 to 2022, the number of jobs in Solano County increased by about 17 percent from approximately 178,400 to 209,300. The comparable statewide increase was about 19 percent over this period, with the number of jobs in California increasing from approximately 21.3 million in 2013 to 25.3 million in 2022 (BEA 2023).

Viewed in terms of employment, government and government enterprises was the largest sector in Solano County in 2022 accounting for 15 percent of total employment, followed by health care and social assistance (14 percent), and retail trade (11 percent) (Table 4.14-5). Viewed in terms of absolute change from 2013 to 2022, the transportation and warehousing sector saw the largest gains, with a net increase of more than 7,800 jobs, which more than doubled employment in the sector. Employment in the health care and social assistance and construction sectors also increased over this period, with net gains of about 5,100 and 4,000 jobs, respectively (Table 4.14-5).

Table 4.14-5. Employment by Industry in Solano County, 2013 and 2022

Economic Sector	2013		2022		2013-2022	
	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Net Change	Percent Change
Farm employment	1,735	1%	1,737	1%	2	0.1%
Forestry, fishing, and related activities	618	0%	644	0%	26	4.2%

[5] Appendix B (g) (7) (A) (v)
[6] Appendix B (g) (7) (A) (i)
[7] Appendix B (g) (7) (A) (iv)

Economic Sector	2013		2022		2013-2022	
	Number of Jobs	Percent of Total	Number of Jobs	Percent of Total	Net Change	Percent Change
Mining	528	0%	445	0%	-83	-15.7%
Utilities	549	0%	701	0%	152	27.7%
Construction	11,789	7%	15,739	8%	3,950	33.5%
Manufacturing	11,110	6%	12,016	6%	906	8.2%
Wholesale trade	5,431	3%	5,104	2%	-327	-6.0%
Retail trade	21,912	12%	23,233	11%	1,321	6.0%
Transportation and warehousing	4,792	3%	12,602	6%	7,810	163.0%
Information	1,621	1%	1,595	1%	-26	-1.6%
Finance and insurance	7,170	4%	9,051	4%	1,881	26.2%
Real estate and rental and leasing	6,434	4%	9,002	4%	2,568	39.9%
Professional, scientific, and technical services	8,146	5%	9,870	5%	1,724	21.2%
Management of companies and enterprises	917	1%	814	0%	-103	-11.2%
Administrative and support and waste management and remediation services	8,737	5%	10,085	5%	1,348	15.4%
Educational services	2,803	2%	3,432	2%	629	22.4%
Health care and social assistance	24,997	14%	30,057	14%	5,060	20.2%
Arts, entertainment, and recreation	5,315	3%	4,345	2%	-970	-18.3%
Accommodation and food services	12,414	7%	14,877	7%	2,463	19.8%
Other services	10,414	6%	12,429	6%	2,015	19.3%
Government and government enterprises	30,936	17%	31,489	15%	553	1.8%
Total employment	**178,368**	**100%**	**209,267**	**100%**	**30,899**	**17.3%**

Note:
1/ Employment estimates include self-employed individuals. Employment data are by place of work, not place of residence, and, therefore, include people who work in the area but do not live there. Employment is measured as the average annual number of jobs, both full- and part-time, with each job counted at full weight.
Source: BEA 2023

The annual average unemployment rate in Solano County in 2023 was 4.7 percent, very slightly lower than the statewide average of 4.8 percent (Table 4.14-6).

Table 4.14-6. Employment Overview, Annual Averages 2023[8]

Area Name	Labor Force	Employment	Unemployment	Unemployment Rate
Solano County	203,100	193,600	9,400	4.7
California	**19,308,300**	**18,388,300**	**920,000**	**4.8**

Source: CEDD (2024)

4.14.2.4 Fiscal Resources

Solano County's proposed budget for 2024–2025 includes a total of $1,585 million in revenues intended to finance county operations, an increase of $8.4 million or 0.5 percent from the County's 2023–2024 adopted budget. Tax revenues are anticipated to increase from $252 million in 2023–2024 to $270 million in 2024–2025, accounting for an estimated 17 percent of total revenues (Table 4.14-7).

[8] Appendix B (g) (7) (A) (iii)

Solano County has a sales and use tax rate of 7.375 percent, which consists of the 7.25 percent combined statewide rate and 0.125 percent collected by Solano County. The share collected by Solano County is a 0.125 percent Solano County Public Library Transactions and Use Tax (California Department of Tax and Fee Administration 2024).

Table 4.14-7. Solano County Revenues and Expenditures ($ Million)

Category	2023-24 Adopted Budget		2024-25 Recommended Budget	
	$ million	Percent	$ million	Percent of Total
Expenditures				
General Government	$141.9	9%	$141.1	9%
Public Protection	$331.2	21%	$363.0	23%
Public Ways and Facilities	$31.5	2%	$38.0	2%
Health and Sanitation	$315.4	20%	$342.4	22%
Public Assistance	$299.6	19%	$271.1	17%
General Fund Transfers	$236.5	15%	$225.1	14%
Contingencies and Reserves	$157.7	10%	$145.9	9%
All Other Expenditures	$63.1	4%	$58.7	4%
Total Expenditures	**$1,576.9**	**100%**	**$1,585.3**	**100%**
Revenues				
Taxes	$252.3	16%	$269.5	17%
Licenses, Permits and Franchises	$15.8	1%	$11.1	1%
Intergovernmental Revenues	$630.8	40%	$607.2	38%
Charges for Services	$126.2	8%	$136.3	9%
Other Financing Sources	$315.4	20%	$313.9	20%
Fund Balance and Reserves	$205.0	13%	$199.8	13%
All Other Revenues	$31.5	2%	$47.6	3%
Total Budget	**$1,576.9**	**100%**	**$1,585.3**	**100%**

Source: Solano County 2023, 2024a

4.14.3 Environmental Analysis[9]

4.14.3.1 Construction Impacts

Project construction activities will include construction of a 300-megawatt, 1,200-megawatt-hour battery energy storage system (BESS) and associated Project substation, inverters, and other ancillary facilities. The Project also includes construction of a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line that will connect the Project to the Pacific Gas and Electric (PG&E) Vaca-Dixon Substation, northwest of the Project site and across Interstate (I) 80. Portions of the proposed transmission line will be installed overhead and underground.

Construction of the BESS and ancillary facilities is expected to take place over 11 months, followed by a 3-month commissioning period (Figure 4-14-1, Table 4.14-8).[10] Construction of the gen-tie line will take place over an approximately 4-month period coinciding with months 7 to 10 of BESS

[9] Appendix B (g) (7) (B)
[10] Appendix B (g) (7) (B) (i)

construction. Employment will generally follow a bell-shaped curve, with a combined peak of 131 workers onsite at one time in month 7, and average monthly employment of 78 over the combined 14-month construction and commissioning phase (Table 4.14-8, Figure 4.14-1).[11]

The total capital cost of the Project is estimated to be $385 million.[12] Local capital expenditures are estimated to be approximately $1.1 million. Total payroll for construction and commissioning is estimated to be approximately $17.6 million.[13]



Figure 4.14-1. Construction Personnel by Month

[11] Appendix B (g) (7) (B) (i)
[12] Appendix B (g) (7) (B) (ix)
[13] Appendix b (g) (7) (B) (vii)

Table 4.14-8. Construction Personnel

Corby BESS Construction Timeline (months)														
Craft/Trade	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
BESS	**Construction**											**Commissioning**		
Construction Laborer	4	12	12	14	16	16	16	16	16	16	32	24	24	24
Carpenters	0	0	0	0	0	2	2	0	0	0	0	0	0	0
Cement Finishers	0	0	0	2	2	2	4	0	0	0	0	0	0	0
Electricians	0	12	12	12	12	12	20	20	20	20	32	32	32	24
Equipment Operators	0	8	8	10	12	12	16	16	8	8	8	0	0	0
Pile Drivers	0	1	1	2	4	4	2	0	0	0	0	0	0	0
Rodmen/ Ironworkers	0	8	8	8	8	8	4	0	0	0	0	0	0	0
Truck Drivers	0	0	0	1	1	2	3	3	3	1	1	0	0	0
Project Manager/ Support	4	8	11	12	16	20	24	20	16	15	24	24	24	16
BESS TOTAL	**8**	**49**	**52**	**61**	**71**	**78**	**91**	**75**	**63**	**60**	**97**	**80**	**80**	**64**
Gen-tie														
Construction Laborers							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				
Rodmen/Ironworkers							2	2	2	2				
Truck Drivers							2	2	2	2				
Project Manager/Support							5	5	5	5				
Gen-Tie Total							**40**	**40**	**40**	**40**				
Total Construction Workforce	**8**	**49**	**52**	**61**	**71**	**78**	**131**	**115**	**103**	**100**	**97**	**80**	**80**	**64**

Note:
BESS – battery energy storage system

Table 4.14-9 provides an overview of recent and projected employment in Solano County for the construction trades that will be employed on the Project. As indicated by this table, there is a large construction workforce in the region. Project-related demands will peak during month 7, with an estimated 131 workers onsite. This demand represents a small share of the existing and projected workforce and suggests that Project-related construction labor demand is unlikely to significantly affect the availability of construction labor in the region. Two construction trades identified in Table 4.14-9—Pile Drivers and Rodmen/Ironworkers—do not have corresponding employment in Solano County. These occupations represent a small share of total employment, with a combined estimated total of 8 workers expected to be onsite during peak construction (month 7), approximately 6 percent of the onsite total.

Table 4.14-9. Construction Workforce by Trade in Solano County, 2020 and 2030

SOC[1/]	Occupational Title	2020	2030	Projected Change	
				Net Change	Percent Change
11-9021	Construction Managers	730	880	150	21%
47-1011	First-Line Supervisors of Construction Trades and Extraction Workers	1,060	1,200	140	13%
47-2031	Carpenters	1,010	1,090	80	8%
47-2051	Cement Masons and Concrete Finishers	280	280	0	0%
47-2061	Construction Laborers	2,130	2,480	350	16%
47-2073	Operating Engineers and Other Construction Equipment Operators	490	560	70	14%
47-2111	Electricians	660	810	150	23%
53-3032	Heavy and Tractor-Trailer Truck Drivers	1,990	2,560	570	29%

Notes:
SOC – Standard Occupational Classification system codes
1/ These are the federal SOC system categories that correspond with the construction trades required for the Project. Two construction trades identified in Table 4.14-6 – Pile Drivers and Rodmen/Ironworkers – do not have corresponding employment in Solano County.
Sources: CEDD 2023

Population Impacts[14]

All construction labor is anticipated to consist of California union workers. Based on the size of the existing and projected construction workforce in the region, most of the construction workforce is anticipated to be hired from within Solano County and other nearby counties. A small portion of the construction workforce could also be drawn from elsewhere in the state. However, as most workers are anticipated to be local and commute daily to the Project site, Project construction is not expected to contribute to a noticeable increase in population within the study area.

Housing Impacts[15] [16]

As noted above, most of the construction workforce is expected to be hired from within Solano County and other nearby counties, with workers commuting daily to the job site from their existing residences. A small portion of the workforce could also be drawn from elsewhere in the state. These workers will likely choose to temporarily relocate to be closer to the Project site for the duration of their employment.

[14] Appendix b (g) (7) (B) (iii)
[15] Appendix b (g) (7) (B) (ii)
[16] Appendix B (g) (7) (B) (iv)

Workers temporarily relocating are expected to represent a small share of the total construction workforce and the associated demand for temporary housing will represent a small portion of the available supply in the study area. Review of existing housing resources in the vicinity of the Project identified an estimated 1,805 and 322 rental units available for rent in Solano County and the city of Vacaville, respectively (see Section 4.14.2.2). In addition, other types of temporary housing resources, including hotel and motel rooms and RV camping spaces are also available near the Project site.

Impacts on Employment and the Local Economy

Construction of the Project will have positive impacts on the local economy. Benefits associated with construction/commissioning will be temporary, one-time impacts that will last for the corresponding 14-month duration (Figure 4.14-1).

The total economic impacts of Project construction were estimated using multipliers from the U.S. Bureau of Economic Analysis (BEA) regional economic model, the Regional Input-Output Modeling System (RIMS II) model. The analysis used Solano County-specific multipliers for 2022, the most recent data available at the time of analysis. Economic multipliers derived from RIMS II are used in the following assessment to estimate total economic impacts. Total economic impacts consist of three components: direct, indirect, and induced impacts. These may be defined as follows:

- The direct impact consists of expenditures made specifically for the proposed Project, such as construction labor and materials. These direct impacts generate economic activity elsewhere in the local economy through the multiplier effect, as initial changes in demand "ripple" through the local economy and generate indirect and induced impacts.
- The indirect impact is the value of inputs purchased in subsequent rounds of spending by the supporting industries. Indirect effects are often referred to as "supply-chain" impacts because they involve interactions among businesses.
- The induced impact is the value of goods and services purchased by all workers whose earnings are affected by the final-demand change (BEA 2024). Workers employed during construction, for example, will use their income to purchase groceries and other household goods and services. Workers at businesses that supply the Project during construction or operation will do the same. Induced effects are also referred to as "consumption-driven" impacts.

Estimated impacts are assessed in terms of total employment and wage and salary earnings. Table 4.14-10 summarizes the results of these analysis. Estimates for construction and commissioning are one-time impacts. Direct employment estimates are presented as full-time equivalents (FTE), with each job representing 12 months (2,080 hours) of employment. Indirect and induced job estimates include full- and part-time jobs. Wage and salary estimates are presented in millions of dollars.

Project construction will directly employ 91 FTEs onsite over the anticipated 14-month construction period, which will include both BESS and gen-tie line installation. Construction will also support employment and earnings in other sectors of the local economy, with indirect impacts estimated to support approximately 20 jobs and induced impacts estimated to support a further 28 jobs (Table 4.14-10). Overall, construction is estimated to support a total of approximately 139 jobs in Solano County and approximately $24.7 million in labor income (Table 4.14-10).

Table 4.14-10. Estimated Economic Impacts from Project Construction and Commissioning

Impact Type[1/,2/]	Employment (Jobs)[3/]	Earnings (millions of dollars)[4/]
Direct	91	$17.6
Indirect	20	$3.6
Induced	28	$3.5
Total	**139**	**$24.7**

Notes:
1/ Indirect and induced impacts are estimated using RIMS II Multipliers for 2332PC Power and communication structures. Multipliers are for Solano County for 2022.
2/ Construction impacts are for 14 months and include BESS construction and commissioning and gen-tie construction.
3/ Direct jobs are FTE for a period of one year (1 FTE = 2,080 hours). Indirect and induced estimates include both full- and part-time jobs.
4/ Earnings impacts are expressed in millions of dollars.
Source: BEA 2024

Impacts on Fiscal Resources[17] [18]

Local capital expenditures during 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 will 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. This anticipated state versus county distribution is based on the composition of the 7.375 percent tax rate, which consists of the 7.25 percent combined statewide rate and a 0.125 percent special district tax levied by Solano County (California Department of Tax and Fee Administration 2024). The 7.25 percent combined statewide rate is distributed to the State (6 percent), County general fund (1 percent), and County transportation (0.25 percent).

This estimate assumes that only local capital expenditures would be subject to sales and use tax in Solano County. However, in practice, the developer anticipates establishing a billing and delivery address at the jobsite in Solano County and, therefore, purchases of equipment and materials would be subject to sales and use tax at the point of use (i.e., the Project site in Solano County). As a result, the Applicant anticipates that Project construction will result in estimated sales and use tax revenues of $18.2 million, with $14.8 million paid to the State and $3.4 million paid to Solano County. This estimate is based on a sales and use tax rate of 7.375 percent, with 6.0 percent paid to the State and 1.375 percent paid to Solano County (as noted above).

4.14.3.2 Operational Impacts

No permanent operations and maintenance (O&M) staff will be located at the Project site. The BESS will be uncrewed and operational control will be from an offsite control room through a supervisory control and data acquisition system. Up to six workers will, however, be required to support onsite and offsite O&M and administrative support functions. Additional workers may be required on intermittent occasions for repairs or replacement of equipment or other specialized maintenance. The operations workforce is expected to be hired from outside Solano County.

One major maintenance inspection will also take place annually, requiring approximately 20 personnel for approximately one week. In addition, approximately every 2 to 3 years the facility will

[17] Appendix B (g) (7) (B) (viii)
[18] Appendix B (g) (7) (B) (x)

require battery augmentation to maintain Project capacity, which will involve a crew of approximately 20 additional workers onsite for approximately 3 months to install and connect additional batteries.

Population Impacts[19] [20] [21]

As noted above, during operations of the Project, there will be no permanent staff onsite. The Project will be controlled from an offsite control room. Six workers will, however, be employed to support onsite and offsite maintenance and will likely be hired from outside the county. Any potential increase in population from workers relocating to be closer to the Project will have a negligible effect on the local population.

Housing Impacts[22]

The small potential increase in local population noted above will have a negligible effect on demand for local housing resources.

Impacts on Employment and the Local Economy

Operation of the Project will have small, positive impacts on the local economy through the creation of local employment opportunities and local expenditures for supplies and services. Indirect and induced jobs and wage and salary earnings during operations were estimated using economic multipliers from the BEA's regional economic model, RIMS II. The analysis used Solano County-specific multipliers for 2022, the most recent data available at the time of analysis. Operation of the Project will employ a direct labor force of approximately 6 workers over the expected 30-year operating life of the Project, with an average annual payroll of $765,000 per year. These workers will not be based onsite but are assumed for the purposes of this analysis to be based elsewhere in Solano County.

Average annual impacts are presented for Project operation in Table 4.14-11. In addition to the 6 jobs, Project operation will support an estimated 6 indirect and 5 induced jobs elsewhere in the local (Solano County) economy. Overall, annual operation is estimated to support a total of 17 jobs and approximately $1.3 million in related earnings (Table 4.14-11). These are average annual impacts that will occur each year over the anticipated 30-year operating life of the Project.

Table 4.14-11. Estimated Average Annual Economic Impacts from Project Operation

Impact Type[1/]	Employment (Jobs)[2/]	Earnings (dollars)
Direct	6	$765,000
Indirect	6	$346,316
Induced	5	$181,841
Total	**17**	**$1,293,156**

Notes:
1/ Indirect and induced impacts are estimated using RIMS II Multipliers for 2211A0 Electric power generation, transmission, and distribution. Multipliers are for Solano County for 2022.
2/ Direct jobs are FTE for a period of one year (1 FTE = 2,080 hours). Indirect and induced estimates include both full- and part-time jobs.
Source: U.S. Bureau of Economic Analysis 2024

[19] Appendix b (g) (7) (B) (i)
[20] Appendix b (g) (7) (B) (ii)
[21] Appendix B (g) (7) (B) (iii)
[22] Appendix B (g) (7) (B) (iv)

Impacts on Fiscal Resources[23] [24] [25]

The Project will generate an estimated $4.3 million in property tax revenues during the first year of operation. This estimate uses a cost approach based on the estimated capital cost of the Project ($385 million), adjusted over time to account for depreciation. Using a straight-line depreciation method that assumes the Project has a 25-year economic life and a 20 percent residual value, Project operation will generate an estimated total of $70.5 million in property tax revenues over the 30-year operating life of the Project and annual average property tax revenues of $2.3 million.

Local expenditures associated with Project operation are expected to be mainly associated with O&M labor and property taxes. Other infrequent local expenditures for fuel and other incidentals will generate small amounts of sales tax during a typical operational year but are not expected to make a notable contribution to Solano County or other taxing jurisdictions.

4.14.3.3 Net Positive Economic Benefit

California Code of Regulations (CCR), title 20, section 1877(f) requires Opt-In Applications to identify preliminary information demonstrating overall net positive economic benefit to the local government that would have had permitting authority over the site and related facility, consistent with Public Resources Code section 25545.9. CCR, title 20, section 1879 (a) (7) further states that the net positive benefits identified in an Opt-In Application may include, but are not limited to, the following: (a) employment growth, (b) housing development, (c) infrastructure and environmental improvements, (d) assistance to public schools and education, (e) assistance to public safety agencies and departments, and (f) property taxes and sales and use tax revenues.

The Project site is in unincorporated Solano County, near the city of Vacaville. The gen-tie line is partially located within the city of Vacaville. The Project will result in net economic benefits to Solano County that can be quantified at this time in two of the areas identified in CCR, title 20, section 1879 (a) (7): (a) employment growth and (f) property taxes and sales and use revenues.

In addition to areas (a) and (f), the Project is also anticipated to result in net positive economic benefits related to two of the other areas identified in CCR, title 20, section 1879 (a) (7): (c) infrastructure and environmental improvements and (d) assistance to public schools and education. These benefits cannot be quantified at this time and are, therefore, discussed qualitatively.

Employment Growth and Tax Revenues

Net economic benefits related to employment growth and tax revenues are estimated by comparing the Project with the most recent use of the Project site. As discussed in Section 4.11.2 of the Application, review of historic aerial imagery available in Google Earth and provided by the National Agriculture Imagery Program (NAIP) identified that the Project site appeared to be used as a crop field from 1937 to 1993, an orchard from 2006 to 2016, and a crop field again from 2020 to 2022. There are no structures on the site. According to the former landowner, the Project site was used for row crops

[23] Appendix B (g) (7) (B) (viii)
[24] Appendix B (g) (7) (B) (x)
[25] Appendix B (g) (7) (B) (xi)

for the past 5 years and an almond orchard prior to that. The following assessment is based on the most recent use of the land for row crops and hay production.

Employment Growth

Prior to acquisition by the Applicant, the Project site was farmed by a tenant farmer on a year-to-year lease. The tenant farmer had no employees and will continue to farm other land in the county, including other land owned by the former owner of the Project site. While the most recent use of the land supported less than one FTE in direct employment, farming activities on the site likely supported jobs and income elsewhere in the local (Solano County) economy.

Table 4.14-12 compares the total (direct, indirect, and induced) jobs that were supported by the former site use (hay production) with construction and operation of the Project. For the purposes of this analysis, cultivation of the site for hay production is assumed to support one FTE in direct employment. Direct employment estimates for construction and operation of the Project are estimates developed by the Applicant. Indirect and induced impacts are estimated using multipliers for Solano County from the BEA's RIMS II model.

Project construction and commissioning will result in an estimated net gain of 137 total (direct, indirect, and induced) jobs compared to the most recent agricultural use of the Project site. This will be a one-time, short-term net gain, distributed over 14 months.[26] Following construction, up to six workers will be required to support onsite and offsite O&M and administrative support functions. Additional workers may be required on intermittent occasions for repairs or replacement of equipment or other specialized maintenance. The operations workforce will be based in Solano County, and Project operations will result in an estimated net annual gain of approximately 15 total (direct, indirect, and induced) jobs that will continue for the 30-year operating life of the Project.

Table 4.14-12. Net Employment Benefits from Project Construction and Operation

Impact Type[1/,2/]	Employment (Jobs)		Former Use (Hay Production)[5/]	Net Project-Related Gain in Jobs	
	Project Construction and Commissioning (One-Time)[3/]	Project Operation (Annual)[4/]		Project Construction and Commissioning (One-Time)	Project Operation (Annual)
Direct	90.8	6.0	1.0	89.8	5.0
Indirect	20.1	6.3	0.7	19.4	5.6
Induced	28.1	4.5	0.3	27.7	4.2
Total	**138.9**	**16.8**	**2.1**	**136.8**	**14.8**

Notes:
1/ Indirect and induced impacts are estimated using RIMS II Multipliers for Solano County for 2022 for the following sectors:
- 111900 Other crop farming
- 2332PC Power and communication structures
- 2211A0 Electric power generation, transmission, and distribution

2/ Direct jobs are FTE for a period of one year (1 FTE = 2,080 hours). Indirect and induced estimates include both full- and part-time jobs.
3/ Construction and commissioning impacts are for 14 months and include BESS construction and commissioning and gen-tie construction.
4/ Operation job estimates are annual impacts assumed to occur for the 30-year operating life of the Project.
5/ The direct annual employment for hay production is rounded up to 1 FTE for the purposes of this analysis.

[26] Project construction and commissioning will take place over 14 months. Direct employment is expressed in FTEs and presented here as an annual impact for ease of comparison.

Property Taxes

The following assessment estimates property tax revenues for the former site use based on the assessed value and taxes levied for the property in 2023 (Solano County 2024b). The assessed value for the former use is assumed for the purposes of analysis to increase 3 percent per year over the 30-year operating life of the Project. In 2023, a total of 1.116 percent in property tax was levied on the Project site. This total consisted of the 1 percent tax rate that was set statewide under Proposition 13 in 178 and additional voter-approved taxes of 0.116 percent. This property tax rate is assumed for the purposes of analysis to remain constant over the 30-year operating life of the Project.

As discussed in Section 4.14.3.2, with-Project property tax estimates use a cost approach based on the estimated capital cost of the Project ($385 million), adjusted over time using a straight-line depreciation method that assumes the Project has a 25-year economic life and a 20 percent residual value.

Based on these assumptions, the Project will result in an estimated net gain of $4.3 million in property tax revenues in its first full year of operation. Viewed over the 30-year operating life, the Project will result in a total estimated net gain of $70.2 million relative to the former agricultural use, with an average annual net gain of $2.3 million (Table 4.14-13).

Table 4.14-13. Net Property Tax Revenue Benefits from Project Operation

Item[1/]	Percent of Total	With-Project Estimate			Former Use[2/]			Net Benefits (With-Project less former use)		
		Year 1	30-Year Annual Average	30-Year Total	Year 1	30-Year Annual Average	30-Year Total	Year 1	30-Year Annual Average	30-Year Total
Taxable Value	NA	$385,000	$210,467	$6,314,000	$504	$799	$23,965	$384,496	$209,668	$6,290,035
Property Tax										
Countywide General Property Tax (1%)[3/]	100%	$3,850	$2,105	$63,140	$5.0	$8.0	$240	$3,845	$2,097	$62,900
Allocation by Fund[4/]										
0001-GENERAL COUNTY	43%	$1,638	$895	$26,860	$2.1	$3.4	$102	$1,636	$892	$26,758
0602-DIXON UNIF SCHOOL DIST M & O	30%	$1,148	$628	$18,825	$1.5	$2.4	$71	$1,146	$625	$18,754
0128-DIXON FIRE	4%	$172	$94	$2,827	$0.2	$0.4	$11	$172	$94	$2,816
0527-SOLANO COMMUNITY COL M & O	4%	$144	$79	$2,365	$0.2	$0.3	$9	$144	$79	$2,356
0108-SPECIAL ROAD	4%	$135	$74	$2,215	$0.2	$0.3	$8	$135	$74	$2,206
Other	16%	$613	$335	$10,048	$0.8	$1.3	$38	$612	$334	$10,010
Other Taxing Authorities (0.116%)[5/]	100%	$447	$245	$7,338	$0.6	$0.9	$28	$447	$244	$7,310
Total (1% tax limitation plus 0.116% voter approved)[6/]	**NA**	**$4,297**	**$2,349**	**$70,478**	**$5.6**	**$8.9**	**$267**	**$4,292**	**$2,340**	**$70,211**

Notes:
NA – not applicable
1/ Estimates are in thousands of dollars.
2/ Estimated property tax revenues for the former site use are based on the assessed value and taxes levied for the property in 2023. The assessed value for the former use is assumed for the purposes of analysis to increase 3 percent per year over the operating life of the Project.
3/ The property tax rate in California is set at 1 percent under Proposition 13 passed in 1978.
4/ There are approximately 75 taxing entities in Solano County. General property tax revenues are distributed to the taxing entities that service the area where the property being taxed is located. The project site is located in tax area 63025. General property tax revenues for properties in tax area 62025 were distributed to the identified taxing entities in 2023 (Solano County 2024c).
5/ Under the provisions of Proposition 13, taxes may be levied on top of the 1% countywide rate if approved by the voters. The Project site was subject to additional taxes of 0.116% in 2023.
6/ These totals consist of the 1 percent General Property Tax plus the additional taxes levied on the property in 2023.

Sales and Use Tax Revenues

The following assessment estimates sales tax revenues for hay production using sample cost information compiled by the University of California (UC) Cooperative Extension and UC Davis for alfalfa hay production in the Sacramento Valley and Northern San Joaquin Valley (UC Cooperative Extension and UC Davis 2020). The study estimated a total cost to produce alfalfa hay of $1,844 per acre in 2020, including irrigation and water costs, labor, and overhead costs. From this total, an estimated $412 per acre ($501 per acre adjusted to 2024 dollars) are expenditures that could potentially occur locally. These expenditures include fertilizer, herbicide, insecticide, bale twine, gasoline, diesel, lube, and machinery repair. Adjusted to 2024 dollars, these representative values suggest that hay production could result in annual local expenditures of approximately $20,000.

Project construction and commissioning will result in an estimated one-time net gain of $18.3 million in sales and use tax revenues compared to the most recent agricultural use of the Project site, with an estimated $3.4 million of this total paid to Solano County. The Project construction and commissioning estimate assumes that the Applicant would establish a billing and delivery address at the job site in Solano County and purchases of equipment and materials would be subject to sales and use tax at the point of use (i.e., the Project site in Solano County). The resulting net gain will be a one-time, short-term increase, distributed over 14 months. Following construction, local expenditures associated with Project operation will generate small amounts of sales tax during a typical operational year that could potentially result in a small net gain relative to the former site use (Table 4.14-14).

Table 4.14-14. Net Sales and Use Tax Revenue Benefits from Project Construction and Operation

Tax Category[1/]	Tax Rate	Sales and Use Tax Revenues			Net Project-Related Gain in Sales and Use Tax Revenues[1/]	
		Project Construction and Commissioning (One-Time)[2/]	Project Operation (Annual)[3/]	Former Use (Hay Production)[4/]	Project Construction and Commissioning (One-Time)	Project Operation (Annual)
Direct Taxable Sales	NA	$247,743	$50.0	$20.0	$288,730	$30.0
Sales and Use Tax						
Local Sales and Use Tax Revenue	1.000%	$2,477	$0.5	$0.2	$2,477	$0.3
County Transportation	0.250%	$619	$0.1	$0.1	$619	$0.1
Solano County Public Library Transactions and Use Tax	0.125%	$310	$0.1	$0.0	$310	$0.0
State Sales and Use Tax Revenue	6.000%	$14,865	$3.0	$1.2	$14,862	$1.8
Total	**7.375%**	**$18,271**	**$3.7**	**$1.5**	**$18,267**	**$2.2**
Solano County Share	1.375%	$3,406	$0.7	$0.3	$3,406	$0.4

Notes:
NA – not applicable
1/ Estimates are in thousands of dollars.
2/ Construction and commissioning impacts are for 14 months and include BESS construction and commissioning and gen-tie construction. Estimates assume that the developer would establish a billing and delivery address at the job site in Solano County for sales and use tax payment on purchases of equipment and materials for the Project's construction.
3/ Operation estimates are annual impacts assumed to occur for the 30-year operating life of the Project.
4/ Direct expenditures for hay production are estimated to be $501 per acre in 2024 dollars. Hay production estimates are annual impacts.

Infrastructure and Environmental Improvements

The Project is an infrastructure improvement that will provide energy storage services at the PG&E Vaca-Dixon Substation, allow connection of renewable resources in Solano County to the local area, support grid stability, and help prevent local and regional blackouts. While the associated net benefits to local governments cannot be quantified at this time, it is anticipated that the Project will benefit Solano County, the city of Vacaville, and other local governments connected to the electric grid.

Education Assistance

With respect to item (d) assistance to public schools and education, the Applicant is currently in discussion with Solano Community College regarding potential investments for training equipment and scholarships. This is still in discussion, as noted, but if these investments were to proceed, they would represent a net benefit to education.

Other Economic Benefits

In addition to the five areas identified in CCR, title 20, section 1879 (a), CEC staff have provided the following direction regarding the identification of net positive benefits:

> "A net analysis should consider all project-related economic effects that result from a change in production or spending in the economy. A model that calculates net positive economic benefit would incorporate other economic impacts (or what are known as "negative events" in IMPLAN) beyond the overall gross impacts of the project such as:
>
> - The opportunity cost of investment in the proposed project;
> - Projected cost of the city providing services to the project;
> - Local economic development losses associated with the displacement of an existing energy source; or
> - Potential increases or decreases in electricity rates or fuel prices resulting from project investments in new energy storage infrastructure."

These potential impacts are discussed in the following sections.

Opportunity Cost

The opportunity cost of a project may be broadly defined as the cost of choosing one alternative over another. For the Applicant, the opportunity cost of the Project represents the decision to invest resources at the Project site or elsewhere. The Applicant has considered only development of a BESS on the site. Project alternatives are discussed in Section 5.0, *Alternatives,* and also summarized in the Executive Summary, Section 1.4, *Project Alternatives*.

For a local government deciding whether to permit a project, the opportunity cost typically represents the decision between permitting the project and the existing condition (i.e., No Action). Under the No Action alternative for this Project, the Project would not be constructed, and the existing environmental setting and use would be maintained. Therefore, for the local government, the opportunity cost of permitting the facility would be forgoing the existing use of the site for agricultural

purposes. The net positive economic benefits of developing the Project versus No Action are discussed in the preceding sections that address employment growth and tax revenues. Infrastructure and environmental improvements, and education assistance.

Cost of Public Services

Section 4.15, *Public Services*, identifies and evaluates issues related to public services. This analysis identifies less than significant impacts to fire and police protection and no impacts to other public services. Further, it may be noted that property taxes generated over the life of the Project would make substantial contributions to the County General Fund and Dixon Fire Protection District that would more than offset any potential fire response and law enforcement costs (see Table 4.14-13).

Energy Replacement

The modeling of displacement of existing energy sources with the addition of another energy sources is extremely complicated. The exercise is even more difficult to perform for the addition of a BESS to the system, which does not create new electricity generation but rather stores electricity for use at a different time. A single BESS, such as Corby, is not likely to displace any specific energy source that operates in the area and as a result there are no associated costs that can be quantified.

However, broadly speaking the addition of a BESS to the system should allow renewable energy that is not used during peak generation times to be stored in the BESS for use during peak demand times and/or times when renewable energy generation is reduced or not possible. A BESS could also be used to provide standby reserve capacity to support grid stability. The overall clean energy transition has and will ultimately displace gas-fired power plants and increase the use of renewable energy. The potential economic loss of the gas-fired power plants will likely be offset by the development and operation of new renewable energy power plants.

Electricity Rates and Fuel Prices

The addition of a single BESS, like Corby, is not likely to affect electricity rates and fuel prices. The BESS is an essential part of the clean energy transition in California, delivering necessary energy storage services through a competitive bidding process.

Economic Model Inputs

CEC staff are in the process of developing a model to assess net local benefits and has requested that the Applicant provide the following information for use in this effort (Table 4.14-15).

Table 4.14-15. Economic Model Input Information Requested by CEC Staff

Industry Sector	Total Value (dollars)	Local Share (dollars)
Plant Investment Hardware	$311,850,000	$0
Plant Installation[1/]	$73,150,000	$18,600,000
Maintenance, Year 1[2/]	$8,900,000	$815,000
Plant Earnings, Year 1[3/]	TBD	TBD
Government Permitting[3/, 4/]	$1,106,000	$37,000
Government Revenue, Year 1[3/]	TBD	TBD
Property Tax, Local[5/]	$4,300,000	$4,300,000
Sales Tax on Installation	$18,271,000	$3,406,000
Total	**$436,471,000**	**$27,121,000**

Notes:
1/ The local share for installation consists of $17.6 million in labor and $1.1 million in locally purchased materials, supplies, and equipment rentals.
2/ Total maintenance value includes operating payroll, production costs, maintenance, and site general and administrative (G&A) costs. The local share consists of $765,000 in labor and $50,000 in locally purchased materials/parts.
3/ Additional information to be provided following clarification from CEC Staff.
4/ Local government permitting fees include previous payments to City of Vacaville and Solano County for local permitting processes and estimated future encroachment and well permitting fees.
5/ Property tax estimates are for the first full year of operation.

4.14.3.4 Environmental and Social Justice[27]

The State of California has established a set of aggressive goals to consider potential environmental and social justice (ESJ) impacts when approving potential large-scale projects. This includes ensuring that a proposed project will not cause a negative ESJ impact to a community while also considering whether a project will provide improvements to a community considered to be disadvantaged.

Methodology

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. Executive Order 12898 is used to inform this analysis but does not apply to the Project because the Applicant is not a federal agency and the Project is located on private lands.

The State of California defines environmental justice as follows:

> *Environmental justice means the fair treatment of people of all races, cultures, and incomes with respect to the development, adoption, implementation, and enforcement of environmental laws, regulations, and policies (Gov. Code, § 65040.12, subd. (e)).*

Identifying whether minority and/or low-income populations could be disproportionately affected by a proposed action generally involves two steps: first, identifying whether minority and/or low-income populations are present, and then, if these types of populations are present, evaluating whether adverse human health or environmental effects would disproportionately affect the identified population or populations.

[27] Appendix B (g) (7) (B) (xiii)

Guidelines provided by the Council for Environmental Quality (CEQ) (1997) and U.S. Environmental Protection Agency (USEPA; 1998) indicate that a minority population may be defined as either: 1) where the minority population comprises more than 50 percent of the total population; and/or 2) where the minority population is meaningfully greater than the minority population in the general population of an appropriate benchmark region used for comparison.[28] Minority populations may consist of a group of individuals living in geographic proximity to one another, or a geographically dispersed set of individuals who would be similarly affected by the proposed action or program. Further, a minority population exists if there is "more than one minority group present and the minority percentage, as calculated by aggregating all minority persons, meets one of the above-stated thresholds (CEQ 1997)."[29] The benchmark region for this assessment is Solano County. Data are also reviewed for the State of California for additional context.

The CEQ and USEPA guidelines indicate that low-income populations should be identified based on the annual statistical poverty thresholds established by the U.S. Census Bureau. Like minority populations, low-income populations may consist of individuals living in geographic proximity to one another, or a geographically dispersed set of individuals who would be similarly affected by the proposed action or program. Low-income populations are identified by the USEPA's Environmental Justice Screening Tool (EJScreen) as households where annual household income is less than or equal to twice the federal poverty level (USEPA 2024a). The California Public Utilities Commission's (CPUC) *Environmental Justice & Social Equity Plan* defines low-income households as households in which annual household income is less than 80 percent of area or state median income (CPUC 2022). Both definitions are considered in the following assessment. An area is considered low income if the share of the population meeting one or both of these definitions is higher than the share in the benchmark region (Solano County), with data also reviewed for the State of California for additional context.

Analysis and Results

The Project site is wholly located in Solano County Census Tract 2529.04, Block Group 2 (Block Group 2529.04.2). Three other block groups also fall within 1-mile of the Project site (Block Groups 2529.04.3, 2529.04.4, and 2533.1). Data compiled from EJScreen and the U.S. Census for these census block groups, Solano County, and the State of California are presented in Table 4.14-16. Data are also presented for the populations within a 1-mile and 6-mile radius of the Project site. These data were compiled using EJScreen's buffer function, which allows a user to define a buffer around a selected point or site polygon.

[28] The benchmark region used for comparison is also referred to as the "reference community" (Federal Interagency Working Group on Environmental Justice & NEPA Committee 2016).

[29] Minority populations identified by the U.S. Census Bureau include Black or African American, American Indian and Alaska Native, Asian, Native Hawaiian and Other Pacific Islander, and Other Race, which are considered races, and persons of Hispanic or Latino origin, which is considered an ethnicity.

Table 4.14-16. Demographic Indicators

Geographic Area[1/,2/]	People of Color[1/]	Low Income	Median Household Income[3/]
Block Group 25290-42	59%	14%	100%
Block Group 25290-43	53%	5%	131%
Block Group 25290-44	52%	10%	116%
Block Group 25330-01	35%	12%	105%
1-mile buffer	55%	14%	na
6-mile buffer	52%	16%	na
Solano County (Reference Community)	**65%**	**22%**	**100%**
State of California	62%	28%	95%

Notes:
NA – not available
1/ A Census block group is a statistical subdivision of a census tract, generally defined to contain between 600 and 3,000 people and 240 and 1,200 housing units, with an optimal population of 1,500. The Project site is located in Block Group 25290-42.
2/ All data are originally from the American Community Survey 2018-2022 5-year estimates compiled by the U.S. Census Bureau. Data for people of color and low income are from EJScreen; median household income data are from the Census web site.
3/ Median household income percentages represent the area median as a share of the Solano County median.
Sources: USEPA 2024b, U.S. Census Bureau 2024d

People of color exceed 50 percent of the total population in all but one of the areas reported in Table 4.14-15, including Solano County (the reference community) and the state of California. These areas all meet the CEQ definition of a minority population based on the 50 percent threshold. However, while people of color in the Project vicinity exceed 50 percent, the share is lower than in the reference community and lower than the statewide average, suggesting that people of color are not disproportionately represented in this area.

The share of households that meet the EJScreen definition of a low-income population is lower than the reference community share in all of the areas reported in Table 4.14-15 and also lower than the statewide average. Median household income in all four census block groups is either equal to or higher than median household income in Solano County (the reference community). These data indicate that the populations in the census block groups within 1 mile of the Project do not meet either definition of a low-income population used for this assessment.

Environmental and social justice communities defined in CPUC (2022) also include Disadvantaged Communities, as identified by CalEnviroScreen. Disadvantaged communities are defined for this assessment as census tracts that score in the top 25 percent of CalEnviroScreen 4.0 (California Environmental Protection Agency [CalEPA] 2024).[30] The Project site is located in Solano County Census Tract 2529.04. This census tract is not identified as a Disadvantaged Community by CalEnviroScreen 4.0 (CalEPA 2024).

Based on the preceding review, populations of color or low-income populations do not appear to be disproportionately present in the Project vicinity when compared to corresponding measures for Solano County (the reference community) and the state as a whole. Further, the other resource-

[30] Census tracts average about 4,000 residents and are designed to be relatively homogenous units with respect to population characteristics, economic status, and living conditions at the time of establishment.

specific evaluations presented elsewhere in this application have not identified any high and adverse human health or environmental effects with the potential to affect nearby populations.

4.14.3.5 CEQA Impact Analysis[31] [32]

IMPACT 4.14-1: Would the project induce substantial unplanned population growth in the area either directly (for example, by proposing new homes or businesses) or indirectly (for example, through the extension or roads or other infrastructure)? (Less than significant)

Construction-related employment will generally follow a bell-shaped curve, with a combined peak of 131 workers onsite at one time in month 7, and average monthly employment of 78 over the combined 14-month construction and commissioning phase (Table 4.14-8, Figure 4.14-1). Workers will be onsite 5 days per week for the duration of the construction period.

The CEDD estimated that the average annual unemployment rate in Solano County in 2023 was slightly lower than the statewide average, 4.7 percent compared to 4.8 percent (Table 4.14-4).

The Project is not anticipated to increase the need for additional housing units as most construction workers are expected to commute daily to the site from within the county or other nearby counties, rather than temporarily relocate to the Project vicinity. An estimated 1,805 and 322 rental units were available for rent in 2022 in Solano County and the city of Vacaville, respectively (see Table 4.14-4), with other types of temporary housing resources, including hotel and motel rooms and RV camping spaces, also available near the Project site. Therefore, construction and operation of the Project is not expected to require any new housing units, the construction of which could cause environmental impacts. As a result, the Project is not expected to induce population growth directly or indirectly.

The electricity stored by the Project is not expected to induce substantial population growth in Solano County or elsewhere. The electricity will be distributed by PG&E and is anticipated to fulfill existing demand rather than generate additional demand or induce potential growth. Therefore, the energy stored by the Project will not directly or indirectly encourage new development or induce population growth.

IMPACT 4.14-2: Would the project displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere? (No Impact)

The Project site contains no structures and was formerly a crop field. There is one residence adjacent to the Project site. The Project will not require the removal of any housing units. Therefore, there will be no potential to displace substantial numbers of existing people or housing, necessitating the construction of replacement housing elsewhere.

4.14.3.6 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kV gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-

[32] Appendix b (g) (7) (B) (iii)

mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of I-80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

The improvements will not affect population or housing in Solano County or the city of Vacaville. PG&E gen-tie line and New Corby Bay construction has been incorporated into the analyses presented in the sections above. Additionally, the PG&E improvements will not have an impact on significance impact criteria 4.14-1 and 4.14-2. No mitigation will be required.

4.14.4 Cumulative Impacts

As discussed above, there will be no impact with respect to the potential displacement of people or existing housing. Therefore, neither the Project nor the alternatives will cause or contribute to any potential cumulative impact to threshold.

The geographic context for the cumulative impacts associated with the potential inducement of population growth consists of Solano County. The temporal scope of potential cumulative impacts will include construction and O&M phases of the Project. Cumulative effects could result from the combination of the incremental impacts of the Project with ongoing impacts of past projects as well as the other present and reasonably foreseeable future projects developed within the geographic scope.

The other present and reasonably foreseeable future projects are summarized in Table 4.11-4. Since there are many factors than can affect the maximum workforce required for any particular project, it is difficult to estimate employment levels (or their potential to overlap) with any certainty. For example, the Project will require a maximum of 131 workers at the peak of construction. In general, battery storage system projects do not induce substantial population growth as they do not create substantial numbers of permanent jobs. Therefore, the Project, in combination with other projects in the cumulative scenario (even if construction in the immediate area were to occur simultaneously), will not be likely to induce migration or population growth. In addition, growth, development, and land use decisions within Solano County and the city of Vacaville are governed by their corresponding General Plans and projects must be consistent with applicable Plan provisions. Therefore, construction of this Project together with the cumulative scenario projects, and other development within the geographic area of cumulative concern, will not result in substantial direct or indirect unplanned population growth. There will be no significant, adverse, cumulative impact relating to the potential inducement of population growth to which the Project would contribute.

4.14.5 Mitigation Measures

No mitigation is required.

4.14.6 Laws, Ordinances, Regulations, and Standards[33]

4.14.6.1 Federal

No federal statutes, regulations, plans, or policies govern population and housing-related considerations on the Project site.

4.14.6.2 State

No state statutes, regulations, plans, or policies govern population and housing-related considerations on the Project site.

4.14.6.3 Local

Solano County General Plan

The Solano County General Plan was adopted in 2008 and serves to provide the framework to fulfill the community's vision for the County (Solano County 2008). The Housing Element of the Solano County General Plan was created to establish a comprehensive plan to address the housing needs in unincorporated Solano County (Solano County 2024d).

> ***Objective H. Enhance and preserve the environmental quality of residential areas.***
>
> ***Policy G.1*** *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.*

Vacaville General Plan

The Vacaville General Plan was passed in 2015 to establish goals, policies, and actions that provide the framework for how the City should grow and change in the coming years. The Housing Element of the General Plan aims to provide goals and policies to encourage safe and adequate housing for the current and future residents of the City at all income levels (City of Vacaville 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 1:*** *Ensure a supply of housing of differing type, size, and affordability in order to meet Vacaville's housing needs for the current and future residents within the community.*
>
> ***Policy HE.1 – GP 7:*** *Establish development and construction standards that encourage energy conservation in residential areas.*

[33] Appendix B (i) (1) (A)

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 residences.*

Policy HE.2 – GP 2: *Support energy-conserving programs in the rehabilitation of affordable housing to reduced household energy costs, improve air quality, and mitigate potential impacts of climate change in the region.*

Policy HE.2 – GP 5: *Support current homeowners in retaining their homeownership status.*

4.14.7 Agencies and Agency Contacts[34]

No agencies were contacted regarding Population and Housing.

4.14.8 Required Permits and Permitting Schedule[35]

There would be no permits related to population and housing required to construct and/or operate the Project.

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4.15 Public Services

This section identifies and evaluates issues related to public services in the context of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

4.15.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	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?			X	
	ii) Police protection?			X	
	iii) Schools?				X
	iv) Parks?				X
	v) Other public facilities?				X

4.15.2 Affected Environment[1]

The setting for public services includes the service areas of the police protection, fire protection, schools, parks, library, and medical providers that would serve the Project.

4.15.2.1 Fire Protection

The Project is located within an Unzoned Local Responsibility Area (LRA) that designates local fire protection departments to be the responding agency (CAL FIRE 2007). The Dixon Fire Department, working under contract with the Dixon Fire Protection District, will provide fire services to the Project site (City of Dixon 2024). The nearest Dixon Fire Protection District station, Station 81, is located at 205 Ford Way in the city of Dixon and is approximately 6.3 miles northeast from the Project site. The Dixon Fire Protection District will be the primary agency to respond to the site in the unlikely event of structural fire or other emergencies. Based off past calls within the service area, response times from Station 81 range between 12 and 14 minutes (Sbozil and Shafer 2024). However, the fire district has a

[1] Appendix B (g) (7) (A) (vi)

joint agency contract and mutual aid agreement with neighboring fire departments including the Vacaville Fire Department that authorizes the closest agency to respond to the fire or other emergency first or support the Dixon Fire Protection District if required (Sbozil 2024). The nearest Vacaville Fire Department Station is located at 650 Eubanks Court in the city of Vacaville, approximately 2.25 miles west of the Project site. Vacaville Fire Department Station 73 provides fire protection services as well as rescue calls and incidents involving hazardous materials (Local Offices 2024).

4.15.2.2 Hospitals

The nearest hospital to the Project site is the Kaiser Permanente Vacaville Medical Center, which is 1.60 miles west from Project site. The Kaiser Permanente Vacaville Medical Center is a general medical and surgical facility that allows for inpatient, outpatient, pharmacy and emergency services (Kaiser Permanente 2024). Emergency medical services will be able to transport patients from the Project site to Kaiser Permanente Vacaville Medical Center in under 5 minutes in the case of an emergency (Sbozil 2024).

4.15.2.3 Police Protection

The Solano County Sheriff's Office is located at 530 Union Ave #100 in the city of Fairfield and will serve the Project site. During the agency outreach process, the Solano County Sheriff's Office confirmed that they would be the responding agency for law enforcement support to the Project, however response times would vary depending on where the police units are stationed for that day (Solano County Sheriff's Office 2024).

4.15.2.4 Schools

The Project site is located within the Dixon Unified School District (DUSD), which operates three elementary schools, one middle school, and two high schools (DUSD 2023). Cooper Elementary School is the closest school to the Project site located approximately 3 miles southwest; however, it is outside of the DUSD. Tremont Elementary School is the nearest school to the Project site within the DUSD, located approximately 4.9 miles northeast and had an enrollment of 490 students for the 2023-24 school year (CDE 2024). The 2023-2024 enrollment at Tremont Elementary increased by approximately 23 percent while the overall DUSD increased by approximately 1 percent since the 2021-2022 school year as shown in Table 4.15-1.

Table 4.15-1. Local Enrollment by Grade

Grade Level	Tremont Elementary Enrollment			Dixon Unified School District Enrollment		
	2021-2022	2022-2023	2023-2024	2021-2022	2022-2023	2023-2024
Kindergarten	59	74	61	291	292	222
First	60	70	84	259	270	244
Second	66	66	77	260	263	269
Third	68	69	75	250	259	272
Fourth	75	70	73	268	264	268
Fifth	70	73	71	251	268	263
Sixth	N/A	N/A	N/A	249	263	255

Grade Level	Tremont Elementary Enrollment			Dixon Unified School District Enrollment		
	2021-2022	2022-2023	2023-2024	2021-2022	2022-2023	2023-2024
Seventh	N/A	N/A	N/A	225	255	255
Eighth	N/A	N/A	N/A	251	230	249
Ninth	N/A	N/A	N/A	264	255	246
Tenth	N/A	N/A	N/A	307	261	259
Eleventh	N/A	N/A	N/A	267	306	262
Twelfth	N/A	N/A	N/A	297	282	323
Total	**398**	**422**	**490**	**3,439**	**3,468**	**3,489**

Source: CDE (2024)

The DUSD requires a developer fee for new residential and commercial or industrial development. Developer fees are paid by property owners and developers to school districts to mitigate the impact created by new development within a school district's boundaries (DUSD 2022). Although the Project is a utility project, developer fees may still apply to it. Based on preliminary consultation with DUSD, developer fees are handled through the building permit process (Morales 2024). The Applicant would pay all required developer fees.[2]

4.15.2.5 Parks

Recreational opportunities near the Project site include parks in Vacaville, State Recreation Areas, and other facilities. The Corderos Park is the nearest park, located approximately 1.45 miles west from the Project site. Parks and other recreational resources are discussed further in Section 4.16, *Recreation.*

4.15.2.6 Other Public Facilities

The nearest library is Vacaville Cultural Center Library, located approximately 3.7 miles southwest of the Project site.

4.15.3 Environmental Analysis[3]

4.15.3.1 CEQA Impact Analysis

IMPACT 4.15-1: Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities, need for new or physically altered government facilities, the construction of which would 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

Less than significant. Since the Project is located within an LRA, the Dixon Fire Protection District is the responding authority and will provide fire services to the Project site. The nearest Dixon Fire station is located at 205 Ford Way in the city of Dixon and is approximately 6.3 miles northeast from

[2] Appendix B (g) (7) (B) (vi)
[3] Appendix B (g) (7) (B) (v)

the Project site. The Dixon Fire Protection District has the capacity to provide fire protection services to the Project site and will respond to the site in the unlikely event of structural fire or other emergency (Sbozil 2024). Additionally, a second fire station located near the southeast corner of Pitt School Road and Lavendar Lane in the city of Dixon is in the process of being developed and would be a closer location to the Project site than the 205 Ford Way station. Building plans for the second fire station are currently under review and funding for construction has not been fully secured, however the Dixon community will be voting on a ballot measure to seek funding for the fire department this November 2024 (Sbozil and Shafer 2024). The Project will be designed in compliance with all applicable federal, state, and local worker safety and protection codes and regulations, which will minimize the risk of the occurrence of fire. The Project is not expected to contribute to an increase in population that will cause an increase in the demand for fire protection.

Project operation and maintenance may introduce potential ignition sources, including transformers, the generation tie (gen-tie) line, switchyard, maintenance vehicles, and gas/electric-powered machinery. However, the potential fire risk is low for these Project components. All battery components for the battery energy storage system will be installed on concrete pads or driven piles and contained within an enclosure to minimize the potential for sparks or ignition. All such enclosures will be equipped with a fire safety system and be in conformance with the Dixon Fire Protection District and Solano County regulations (see Section 2.3.6 in Section 2, *Project Description*). Additionally, Dixon Fire Protection District Station 81 houses various vehicles and equipment suitable to respond to potential incidents at the Project site including two type one engines with advanced life support capabilities, a 105-foot ladder truck, and two water tenders with 2,000-gallon water capacity (Sbozil and Shafer 2024).

Therefore, the Project is not anticipated to result in substantial adverse physical impacts associated with the provision of new or physically altered fire protection facilities or need for new or physically altered fire protection facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for fire protection services.

ii) Police protection

Less than significant. The Project site will be serviced by the Solano County Sheriff's Office. The Project is not anticipated to contribute to a population increase that will require an expansion of police protection. No new residences are proposed as part of the Project. The construction and operation of the Project will not substantially increase the demand for police services.

The facility will be secured with a 6-foot-tall chain-link fence above-grade topped with 1 foot of three-strand barbed wire along the perimeter of the Project site. Access to the facility will be provided by a gated entry point. Motion-controlled security lighting will be installed and allow for the Project site to be monitored remotely. Lights will be installed at the primary access gates, the onsite substation, and the entrance to energy storage structures for maintenance and security purposes.

By implementing these measures, the Project will not result in any substantial adverse physical impacts associated with the provision of new or physically altered police protection facilities or need

for new or physically altered police protection facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for police services.

iii) Schools

No Impact. The nearest school within the DUSD is Tremont Elementary School, which is approximately 4.9 miles away from the Project site at 355 Pheasant Run in the city of Dixon. Because the Project will only require up to six workers during operation, the Project is not anticipated to contribute an increase in population or the associated potential increase in school-aged children. Therefore, the Project will not result in any increase demand for schools. However, the Applicant will pay any development impact fee to the County and school district as required through the building permit process.

The Project will not result in substantial adverse physical impacts associated with the provision of new or physically altered school facilities or need for new or physically altered school facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for schools.

iv) Parks

No Impact. The nearest park, Corderos Park, is a small local park managed by the Vacaville Parks and Recreation Department and is approximately 1.4 miles from the Project site. The Project is not anticipated to contribute an increase in population and, therefore, will not result in any increase demand for park facilities.

The Project will not result in substantial adverse physical impacts associated with the provision of new or physically altered park facilities or need for new or physically altered park facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios or other performance objectives for any park services. Parks and other recreational resources are discussed further in Section 4.16, *Recreation*.

v) Other public facilities

No impact. The Project is not anticipated to contribute to increased population growth. It is not anticipated that the Project would increase the demand for public facilities, such as libraries or other facilities. Therefore, the Project will not result in substantial adverse physical impacts associated with the provision of new or physically altered public facilities or need for new or physically altered public facilities, the construction of which could cause significant environmental impacts, to maintain acceptable service ratios, response times, or other performance objectives for any other public facilities.

4.15.3.2 PG&E Facilities

To accommodate the Project, Pacific Gas and Electric (PG&E) will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within

the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures and the Interstate 80 crossing, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

Similar to the Project site, construction and operation of the PG&E gen-tie line will not increase demand for public services. Additionally, there will be no need for improvements or construction to schools, parks, police and fire stations, or other public facilities. Therefore, the PG&E gen-tie line will not have an adverse impact on public services or facilities. No mitigation will be required as a result of these improvements.

4.15.4 Cumulative Effects

As discussed above, there will be no impact to the provision of new or physically altered fire or police protection, school, medical, or other public service facilities. The Project will not cause or contribute to any cumulative impact related to these services.

4.15.5 Mitigation Measures

There will be no impacts to public services; therefore, no mitigation is required.

4.15.6 Laws, Ordinances, Regulations, and Standards[4]

4.15.6.1 Federal

No federal statutes, regulations, plans, or policies relevant to public services apply to the Project site.

4.15.6.2 State

Quimby Act

The Quimby Act (California Government Code Section 66477) was established by the California legislature in 1965 to preserve open space and parkland in the rapidly urbanizing areas of the state. The Quimby Act authorizes local governments to establish ordinances requiring developers of new subdivisions to dedicate land for parks, pay an in-lieu fee, or perform a combination of the two. The Quimby Act requires a city or county to adopt standards for recreational facilities in its general plan recreation element if it is to adopt a parkland dedication/fee ordinance. The Project will pay any required developer fees to the County and the DUSD.

State School Funding

California Education Code Section 17620 authorizes school districts to levy a fee, charge, dedication, or other requirement against any development project for the construction or reconstruction of school facilities, provided that the district can show justification for levying of fees. California Government Code Section 65995 limits the fee to be collected to the statutory fee unless a school

[4] Appendix B (i) (1) (A)

district conducts a School Facility Needs Assessment (California Government Code Section 65995.6) and meets certain conditions. Senate Bill 50 (Chapter 407, Statutes of 1998) instituted a school facility program by which school districts can apply for state construction and modernization funds. This legislation imposed limitations on the power of cities and counties to require mitigation of school facilities impacts as a condition of approving new development. The Project will pay any required developer fees to the County and the DUSD.

4.15.6.3 Local

Solano County General Plan

The Public Facilities and Services of the Solano County General Plan contains goals, policies, and programs related to fire protection and police services. The following goals and policies are applicable to the Project (Solano County 2008). Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable County General Plan goals and policies as related to public services.

> ***Goal PF.G-1:*** *Provide adequate public services and facilities to accommodate the level of development planned by the County.*
>
> ***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.*

City of Vacaville General Plan

The Public Facilities and Services chapter of the City of Vacaville General Plan contains goals, policies, and programs related to fire protection and police services. As the Project site is located within the

City of Vacaville General Plan Sphere of Influence, the following goals and policies are applicable to the Project (City of Vacaville 2015). Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable City General Plan goals and policies as related to public services.

> ***Goal PUB-1:*** *Provide adequate fire, rescue, and emergency medical services to serve existing and new development.*
>
> ***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.*
>
> ***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.*

4.15.7 Agencies and Agency Contacts

Several of the public services were contacted during the process of this application. Communication records are provided in Appendix 4.15-A. Table 4.15-2 includes which agencies and the point of contact, where provided.

Table 4.15-2. Agency Contacts for Public Services[5]

Agency	Contact Information	Permit / Issue
Solano County Sheriff's Office	Solano County Sheriff's Office 530 Union Avenue, Suite 100 Fairfield, California (707) 784-7000	Police
Dixon Fire Department	Bill Sbozil, Fire Marshal 205 Ford Way Dixon, CA 95620 (707)678-7060	Fire
Dixon Fire Department	Randy Shafer, Deputy Fire Marshall 205 Ford Way Dixon, CA 95620 (707)678-7060	Fire
Vacaville Fire Department	Kris Concepcion Fire Chief 630 Merchant Street Vacaville, CA 95688 (707) 449-5452	Fire Response (under mutual aid agreement)
Dixon Unified School District	Rose Morales, Administrative Specialist 180 South First Street Dixon, CA 95620 707-693-6300	Schools

[5] Appendix B (i) (2)

4.15.8 Required Permits and Permitting Schedule[6] [7]

There are no permits through the various public services that will be required to construct and/or operate the Project.

4.15.9 References

CDE (California Department of Education). 2024. Enrollment by Grade. Available online at: https://dq.cde.ca.gov/dataquest/dqcensus/enrgrdlevels.aspx?agglevel=School&year=2023-24&cds=48705326110282 (accessed July 2024).

CAL FIRE (California Department of Forestry and Fire Protection). 2007. FRAP Solano County Draft Fire Hazard Severity Zones in LRA. Available online at: https://34c031f8-c9fd-4018-8c5a-4159cdff6b0d-cdn-endpoint.azureedge.net/-/media/osfm-website/what-we-do/community-wildfire-preparedness-and-mitigation/fire-hazard-severity-zones/fire-hazard-severity-zones-map/upload-2/fhszl06_1_map48.pdf (accessed July 2024).

City of Dixon. 2024. About the Dixon Fire Department. Available online at: https://www.cityofdixon.us/departments/Fire/AbouttheDixonFireDepartment (accessed July 2024).

City of Vacaville. 2024. City of Vacaville General Plan Chapters. Available online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents (accessed July 2024).

DUSD (Dixon Unified School District). 2022. Developer Fee Justification Study. Available online at: https://dixon-ca.granicus.com/MetaViewer.php?view_id=3&clip_id=1503&meta_id=133690#:~:text=On%20February%2023%2C%202022%2C%20the%20new%20rates%20are,the%20Board%20adoption%20of%20the%20new%20fee%20rates (accessed July 2024).

DUSD. 2023. Dixon Unified School District Home Page. Available online at: https://www.dixonusd.org/ (accessed July 2024).

Kaiser Permanente. 2024. Vacaville Medical Center. Available online at: https://healthy.kaiserpermanente.org/northern-california/facilities/Vacaville-Medical-Center-100315 (accessed July 2024).

Local Offices. 2024. Vacaville Fire Department Station 73 in Vacaville, California. Available online at: https://www.localoffices.org/fire-departments/california/vacaville/vacaville-fire-department-station-73/398269 (accessed August 2024).

Morales, Rose. 2024. Personal Phone Communication between Rose Morales, Administrative Specialist for Dixon Unified School District, with Hannah Marquez, Tetra Tech. July 23, 2024.

[6] Appendix B (i) (1) (B)
[7] Appendix B (i) (3)

Sbozil, Bill. 2024. Personal Phone Communication between Bill Sbozil, Fire Marshal for Dixon Fire Department, with Hannah Marquez, Tetra Tech. July 29, 2024.

Sestanovich, Nick. "Dixon City Council to Begin Process of Bringing Second Fire Station to Town." *The Vacaville Reporter*, October 2021. Available online at: www.thereporter.com/2021/10/15/dixon-city-council-to-begin-process-of-bringing-second-fire-station-to-town/ (accessed July 2024).

Sbozil, Bill, and Randy Shafer. 2024. Email Communication between Bill Sbozil, Fire Marshal for Dixon Fire Department, and Randy Shafer, Deputy Fire Chief for Dixon Fire Department, and Hannah Marquez, Tetra Tech. August 8, 2024.

Solano County. 2008. Solano County General Plan. Available online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp (accessed July 2024).

Solano County Sheriff's Office. 2024. Personal phone communication with Hannah Marquez, Tetra Tech (contact name not provided). July 30, 2024.

4.16 Recreation

This section provides a discussion of existing and proposed recreational resources and an evaluation of potential recreational impacts associated with the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). For this analysis, the affected environment study area is defined as those areas within 1 mile of the Project site or within 0.25 mile of any project-related linear facilities. For the Project, all project-related linear facilities (and their 0.25-mile buffer) are located within 1 mile of the Project site.

Issues related to recreation have been identified and evaluated based on onsite surveys; review of current U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle maps; aerial photography; review of local land use ordinances; and review of land use goals and policies identified in the Solano County General Plan and the Vacaville General Plan.

4.16.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	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?				X
2.	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?				X

4.16.2 Affected Environment[1,2]

Recreational opportunities near the Project site include state, regional, and local parks. Most recreational resources are northeast of the Project site. Smaller, local recreational facilities within 5 miles of the Project site are listed in Table 4.16-1, and larger, regional recreational facilities within 10 miles of the Project site are described in detail below. No recreational resources are located within 1 mile of the Project site or 0.25 mile of project-related linear facilities; see Figure 4.16-1.

Table 4.16-1. Small, Local, Recreational Facilities within 5 miles of the Project

Facility	Managing Agency	Distance from Project (Miles)
Corderos Park	Vacaville Parks and Recreation	1.5
Stonegate Park	Vacaville Parks and Recreation	2.6
Play4All Park	Vacaville Parks and Recreation	2.9
Cooper's School Park	Vacaville Parks and Recreation	3.2
Hawkins Park	Vacaville Parks and Recreation	3.6
Ridgeview Park	Vacaville Parks and Recreation	3.6

[1] Appendix B (g) (1)
[2] Appendix B (g) (3) (A); Appendix B (g) (3) (A) (i)

Facility	Managing Agency	Distance from Project (Miles)
Centennial Park	Vacaville Parks and Recreation	3.8
Browns Valley Park	Vacaville Parks and Recreation	4.0
Meadowland Park	Vacaville Parks and Recreation	4.0
Andrew's Park	Vacaville Parks and Recreation	4.8

Source: City of Vacaville Parks and Recreation 2024a

4.16.2.1 Larger Regional Recreational Areas within 10 Miles of the Project

Lake Solano County Park and Campground

The Lake Solano County Park and Campground is located approximately 8.7 miles northwest of the Project site. The facility is operated by the Solano County Parks and Recreation Department. The facility includes campgrounds and allows for non-motorized boating, swimming, fly fishing, and hiking (Solano Resource Conservation District 2024).

Lagoon Valley Park

The Lagoon Valley Park is located approximately 6.8 miles southwest of the Project site. The park is operated by the Vacaville Parks and Recreation Department. The park was developed under an agreement between the City of Vacaville and Solano County; however, the operation of the park was transferred from Solano County to the City in 1994 (Visit Vacaville 2024). The facility includes a disc-golf course; dog park; open space trails for hiking, horseback riding, and biking; a 100-acre lake for non-motorized boating; and an outdoor archery range (City of Vacaville 2024b).

NextEra Energy Corby Battery Energy Storage Project

Figure 4.16-1 Recreation

Solano County, CA



Proposed Features
- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 1)
- Project Site

Parks in Solano County
- City of Vacaville

PG&E Features
- Gen-tie (Overhead; PG&E)

Transportation
- Interstate Highway
- Road

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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4.16.3 Environmental Analysis[3]

4.16.3.1 CEQA Impact Analysis

IMPACT 4.16-1: 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? (No Impact)

Increases in the use of recreational facilities typically are associated with substantial growth in population or a substantial reduction in the availability of existing parks or other recreational facilities. The Project site is not located within or adjacent to any parks or recreational facilities, and no such facilities occur within 1 mile of the Project site. No residential facilities are proposed as part of the Project. Therefore, population growth is not expected as a result of the Project, and the accelerated use of parks and other regional facilities is not anticipated.

During construction, new temporary construction jobs will be generated, and workers will generally come from the surrounding community relative to the Project site; see Section 4.14, *Population/Housing*, for additional details. Thus, little to no increase in population associated with new employment is expected, and there will be no associated increased use of local and regional parks or recreational facilities that would lead to substantial physical deterioration.

The Project will be uncrewed and operational control will be from an off-site control room through a supervisory control and data acquisition system. The Project will require up to six workers to support onsite and offsite operations and maintenance and administrative support functions. Onsite operations and maintenance activities will include performing routine visual inspections, executing minor repairs, and responding to needs for plant adjustment. One major maintenance inspection will occur each year, requiring approximately 20 personnel for approximately one week. In addition, approximately every 2 to 3 years, the facility will require battery augmentation to maintain Project capacity; a crew of approximately 20 additional workers will be onsite for approximately 3 months to install and connect additional batteries. Therefore, the Project is not expected to generate an increase in population and there will be no associated increased use of local and regional parks or recreational facilities that would lead to substantial physical deterioration.

IMPACT 4.16-2: 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? (No Impact)

The Project will develop a 300-megawatt battery energy storage system. The Project will not include any type of residential development with a need for recreational facilities, as described in **Impact 4.16-1**. Therefore, the Project would not develop recreational facilities that may have an adverse physical effect on the environment.

[3] Appendix B (g) (1)

4.16.3.2 PG&E Generation Tie Line

To accommodate the Project, Pacific Gas and Electric (PG&E) will be responsible for siting, design, and construction of the 230-kilovolt generation tie (gen-tie) transmission line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

The PG&E Project components would not lead to an increase in population resulting in the deterioration or excessive use of parks and recreation facilities during construction or operation of the Project. Additionally, there would be no need to construct or expand recreational facilities. Therefore, there will be no impacts to park and recreation facilities. No mitigation would be required.

4.16.4 Cumulative Effects[4]

As described above, the Project will result in no impact to recreation. Therefore, the Project will not cause or contribute to a significant cumulative impact to recreation.

4.16.5 Mitigation Measures[5]

No mitigation measures are required.

4.16.6 Laws, Ordinances, Regulations, and Standards[6]

4.16.6.1 Federal

No federal regulations pertaining to recreation apply to the Project.

4.16.6.2 State

No state regulations pertaining to recreation apply to the Project.

4.16.6.3 Local

Solano County General Plan

The Solano County General Plan was adopted in 2008 and consists of 12 chapters, including the introduction, nine elements applicable to the entire County, and two area plans, which include goals and policies for land use, agriculture, resources, public health and safety, economic development, transportation and circulation, public facilities and services, housing, and parks and recreation. The

[4] Appendix B (g) (1)
[5] Appendix B (g) (1)
[6] Appendix B (i) (1) (A)

Solano County General Plan does not contain any relevant goals or policies related to recreation that are applicable to the Project.

Vacaville General Plan

The City of Vacaville General Plan is a planning and policy document to help guide the City's future conservation, enhancement, and development. The City of Vacaville General Plan does not contain any relevant goals or policies related to recreation that are applicable to the Project.

4.16.7 Agencies and Agency Contacts

Refer to Section 4.11.7, *Agencies and Agency Contacts*, for a list of agencies contacted regarding land use issues. No agencies were contacted specifically for recreation-related issues.

4.16.8 Required Permits and Permitting Schedule

Refer to Section 4.11.8, *Required Permits and Permitting Schedule*, for related information for land use in general; no permits are required related to recreation.

4.16.9 References[7]

City of Vacaville. 2021. Vacaville General Plan: Parks and Recreation Element. Available online at: https://www.cityofvacaville.gov/home/showpublisheddocument/5413/638371467201170000 (accessed July 2024).

City of Vacaville. 2024a. Vacaville Parks and Fields. Available online at: https://www.cityofvacaville.gov/government/parks-and-recreation/parks-fields (accessed July 2024).

City of Vacaville. 2024b. Lagoon Valley Park. Available online at: https://www.cityofvacaville.gov/government/parks-and-recreation/parks-fields/lagoon-valley-park (accessed July 2024).

Solano Resource Conservation District. 2024. Winters – Lake Solano County Park. Available online at: https://www.solanorcd.org/lake-solano-park.html (accessed July 2024).

Visit Vacaville. 2024. An Insider's Guide to Vacaville Lagoon Valley Park: How to Make the Most of Your Visit. Available online at: https://www.visitvacaville.com/blog/vacavilles-lagoon-valley-park/ (accessed July 2024).

[7] Appendix B (g) (1)

4.17 Transportation

This section identifies and evaluates issues related to transportation in the context of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

The following discussion includes summaries and provides specific discussions of results and conclusions.

4.17.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the Project:					
1.	Conflict with a program, plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities?			X	
2.	Conflict or be inconsistent with CEQA Guidelines § 15064.3, subdivision (b)?			X	
3.	Substantially increase hazards due to a geometric design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?			X	
4.	Result in inadequate emergency access?			X	

4.17.2 Affected Environment[1]

The existing setting includes descriptions of the roadways and documentation of existing vehicular traffic, major highways, local roads, and pedestrian and bicycle access conditions.

The Project is approximately 5 miles northeast of the center of the city of Vacaville and is located directly east of Interstate (I)-80. Between exits 57 and 59. The Project site can be accessed from I-80 via Weber Road to Byrnes Road. Figure 4.17-1 shows the Project location and major roadways surrounding it.[2]

[1] Appendix B (g) (1)
[2] Appendix B (g) (5) (A)

NextEra Energy
Corby Battery Energy Storage System Project

Figure 4.17-1
Regional Transportation Map

Solano County, CA

- County Boundary

Proposed Features

- Project Site

Transportation

- Interstate Highway
- U.S. Highway
- State Highway
- Railroad
- Airport

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:250,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 5 10 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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4.17.2.1 Environmental Setting[3]

The Solano County transportation system comprises freeways, arterials, and local streets for vehicles, as well as bike trails, airports, and bus routes. The Solano County General Plan (General Plan) defines freeways as high-speed, high-capacity transportation facilities serving regional and Countywide travel; arterials as high mobility, high-capacity roadways that provide access to regional transportation facilities, accommodate intra-community travel, and connect the rest of the Countywide collector system; collectors as low-speed, low-volume streets with two lanes that provide for circulation within and between neighborhoods and support relatively short trips and are meant to collect vehicles from local streets and distribute them to the arterial network; and local streets as roadways that provide access to individual properties, primarily residences and businesses, and connect to the County's network of arterial and collector streets.

Major Highways

I-80 is a six- to eight-lane east-west freeway that runs from the San Francisco-Oakland Bay Bridge, traveling through Fairfield and Vacaville before continuing through Davis and Sacramento to the east. Access to I-80 from the Project site is provided via Weber Road (approximately 1.0 mile from the Project site).

According to the most recent data published by the California Department of Transportation (Caltrans), the average annual daily traffic (AADT) volume on I-80 in the vicinity of the Project site is approximately 136,000 vehicles in each direction, with up to 9,500 vehicles during the peak traffic hour (Caltrans 2022).

I-505 is a four-lane, north-south divided highway that provides a connection between I-80 (southwest of the Project site) to I-5 farther north. According to the most recent data published by Caltrans, the AADT volume on I-205 in the vicinity of the Project site is approximately 35,000 vehicles in each direction, with up to 3,400 vehicles during the peak traffic hour (Caltrans 2022).

Local Roads

Weber Road, Byrnes Road, and Kilkenny Road, all of which are designated as two-lane collectors in the City of Vacaville General Plan and the Solano County General Plan, will be primarily utilized to access the Project site from I-80. These roadways are displayed in Figure 4.17-2.

[3] Appendix B (g) (C) (i), Appendix B (g) (C) (ii)

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.17-2 Major Transportation Facilities within 1 Mile of Project

Solano County, CA

Proposed Features

- Project Site

Transportation

- Interstate Highway
- Railroad
- Bus Routes
- Bicycle Path

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.5 1 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Air Traffic

The nearest airport to the Project site is Nut Tree Airport, which is approximately 3.0 miles to the southwest. Figure 4.17-3 shows the Nut Tree Airport, its runway configuration, and its area of influence as well as the Project site location. The Project is not located within the airport influence area (AIA) of the Nut Tree Airport Plan (Solano County 1988). However, the Project site is also located approximately 7.25 miles north of Travis Air Force Base (AFB) and is within the AIA as identified in the Travis AFB Land Use Compatibility Plan (LUCP) which has been adopted by the Solano County Airport Land Use Commission (ALUC) (Coffman Associates 2024). Specifically, the Project is located within Zone D of the Travis AFB LUCP. Figure 4.17-4 shows the Travis AFB, runway configuration, area of influence, and Project location. Based on the criteria outlined in Table 1 of the Travis AFB LUCP, the only prohibited uses within this Zone are hazards to flight, which include physical (e.g., tall objects), visual impacts, and electronic forms of interference with the safety of aircraft operations. Limitation on the height of structures and notice of aircraft overflights are the only compatibility factors within this zone. Airport Land Use Commission review is required for objects in Zone D only if they are greater than 200 feet above ground level. According to the LUCP, there are no particular safety requirements for Zone D. The Project will not include any structures taller than 200 feet above ground and therefore does not require ALUC review. Since the project will not produce glare, will not attract birds, and will not otherwise interfere with the safety of aircraft operation, it will not conflict with the Travis AFB LUCP. The Applicant has also submitted an Informal Review Request to the Department of Defense Siting Clearinghouse to confirm that the Project will not interfere with operations at Travis AFB (Appendix 4.11-C). As such, the Project will not interfere with airport operations or result in safety hazards for people residing or working in the area. Impacts will be less than significant.

Potential Federal Aviation Administration (FAA) notification requirements for elevated Project structures under Title 14 of the Federal Code of Regulations, Part 77 (FAA 2010) 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). The proposed structures are anticipated to be shorter than those heights, to be confirmed during final design. Additionally, the Project structures will 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.

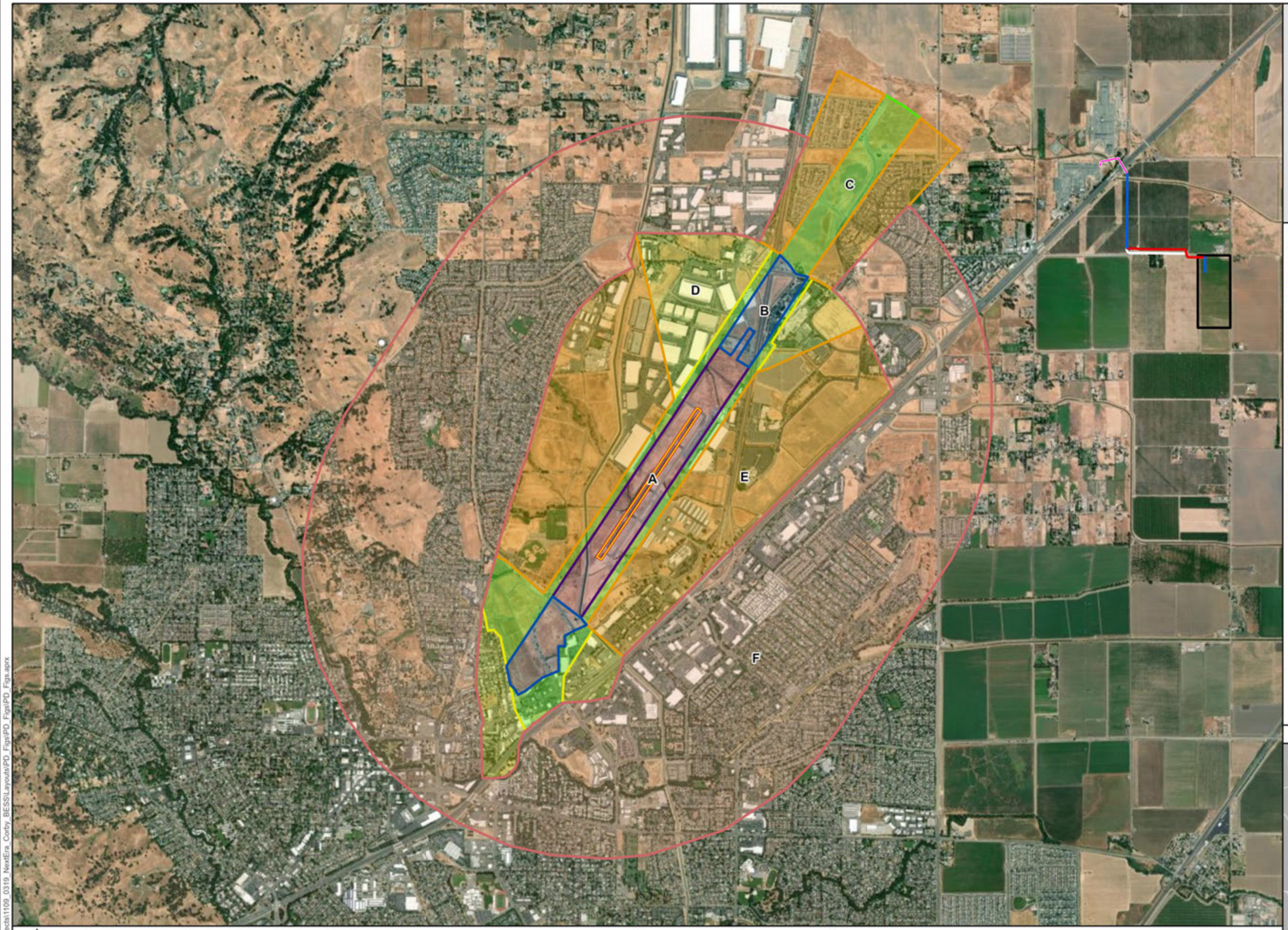
Rail Traffic

The Project site is approximately 1.75 miles west of the Union Pacific Railroad tracks. Since the Project will not affect the railroad, and the railroad will not affect the Project, further discussion of the Union Pacific Railroad tracks is not necessary.

NextEra Energy Corby Battery Energy Storage System Project

Figure 4.17-3 Nut Tree Airport Area of Influence

Solano County, CA



Airport Runway

Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

PG&E Features

- Gen-tie (Overhead; PG&E)

Nut Tree Airport Compatibility Zones

- A
- B
- C
- D
- E
- F

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:30,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.5 1 Miles

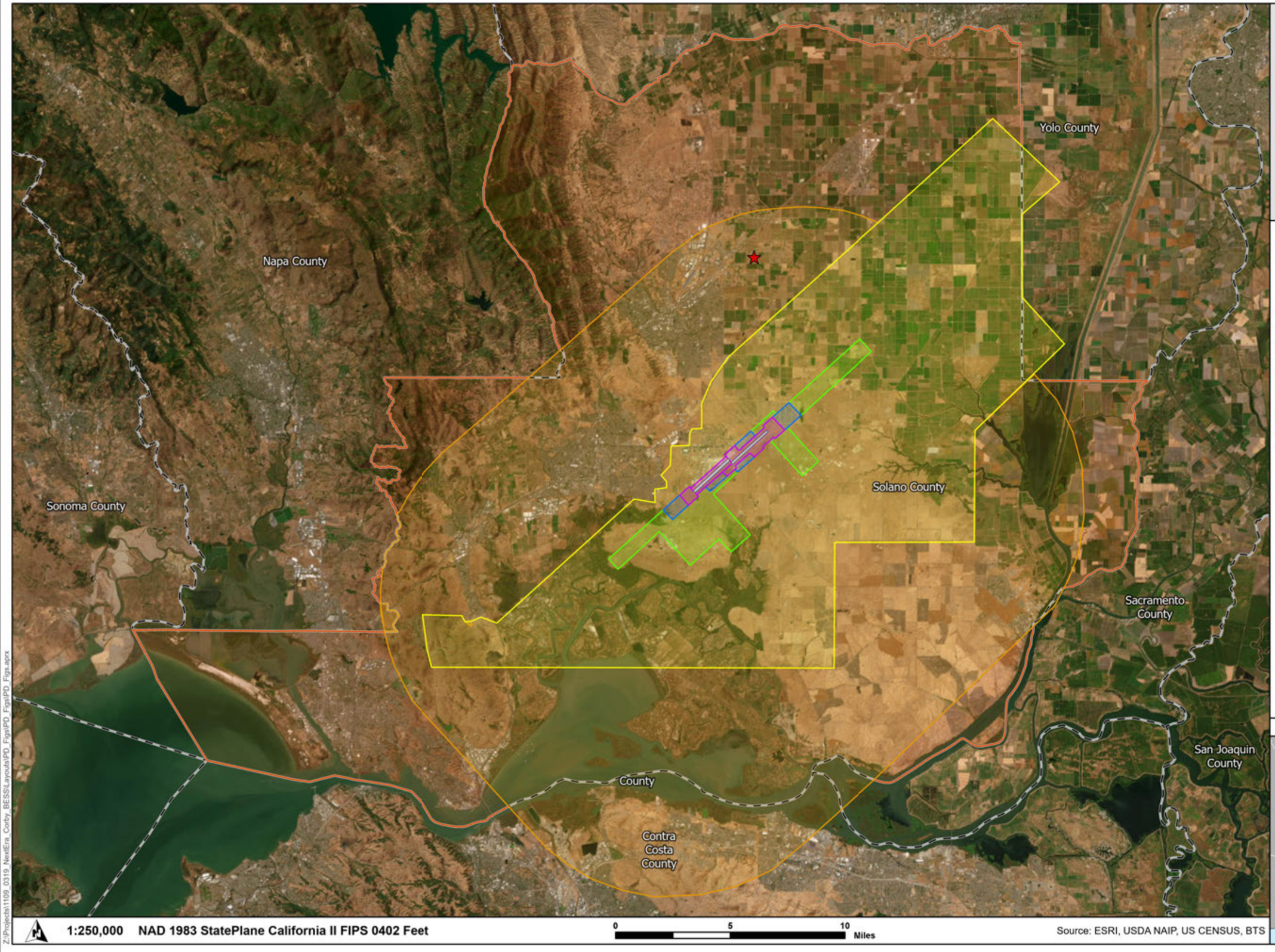
Source: ESRI, USDA NAIP, US CENSUS, BTS

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NextEra Energy Corby Battery Energy Storage System Project

Figure 4.17-4 Travis Air Force Base Area of Influence

Solano County, CA



Airport Runway
County Boundary

Proposed Features

Project Site

Travis Air Force Base Compatibility Zones

A
B1
B2
C
D
E

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:250,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 5 10 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Weber Road is a generally east-west roadway that runs from Pitt School Road in Solano County to I-80, where it turns into a north-south roadway named N. Meridian Road. It continues north through agricultural areas, where it terminates at Sweeney Road. In the vicinity of the Project site, this roadway operates with one, undivided travel lane in each direction with shoulders of varying width. The speed limit is 50 miles per hour (mph) from I-80 to Lewis Road. The Vacaville General Plan identifies Weber Road as a local roadway.

Byrnes Road is a north-south local roadway that extends from Weber Road to California Pacific Road. This roadway operates with one, undivided travel lane in each direction with varying width shoulders. There is no posted speed limit within the study area. The California Vehicle Code 22350 requires drivers to obey a maximum speed limit of 55 mph while traveling on two-lane undivided roadways. The Vacaville General Plan identifies Byrnes Road as a local roadway. Two Project site access driveways are planned on Byrnes Road south of the intersection of Byrnes Road and Kilkenny Road.

Kilkenny Road is an east-west local roadway that extends approximately 1 mile from Willow Road to Byrnes Road. This roadway operates with one, undivided travel lane in each direction with varying width shoulders. There is no posted speed limit within the study area. One Project site access driveway is planned on Kilkenny Road approximately 0.6 mile west of Byrnes Road.

Transit Conditions

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. For Solano County, Solano County Transit operates the Solano Express Blue Route, which provides regional public transit to the cities of Davis, Dixon, Vacaville, Fairfield, Benicia, and Walnut Creek. The Solano Express Blue Route stops at the Vacaville Transportation Center, approximately 6 miles from the Project site. Vacaville City Coach (2024) provides six local bus routes that provide coverage throughout the city. The closest City Coach route, Route 4, operates on an hourly schedule from Vaca Valley Parkway south along Orange Drive and Nut Tree Parkway toward the Vacaville Transportation Center. This intersection is located approximately 2.2 miles from the Project site; therefore, no bus stops directly serve the Project site. The Yolo County Transportation District provides public transportation to the communities within and around Yolo County. Yolobus serves communities of Davis, West Sacramento, and Woodland. No Yolobus routes provide access near the project site.

Walking/Accessibility Conditions

The Project site is located in a rural setting on the border of the City of Vacaville and in unincorporated Solano County. There are no pedestrian facilities, such as crosswalks, curb-ramps, or pedestrian signal heads, surrounding the Project site or at any of intersections in the Project vicinity.

Bicycle Conditions

According to the Solano County Active Transportation Plan (Solano Transportation Authority 2020), Solano County currently has approximately 231 miles of bikeways, including Class I (68 miles), Class II (137 miles), and Class III (26 miles). There are currently no Class IV bikeways in Solano County. There are no bike lanes adjacent to the Project site.

In terms of future bikeways, the Solano Active Transportation Plan recommends an additional 48.2 miles of bicycle facilities that would complete the Countywide Backbone Network, including Class I shared use paths (3.1 miles), Class II bike lanes (19.5 miles), Class III bike routes (6.4 miles), and Class IV separated bikeways (13.5 miles), in Solano County. An additional 5.7 miles of bikeways remain to be determined.

No bikeways are planned in the vicinity of the Project site.

4.17.2.2 2024 Existing Conditions[4]

The City of Vacaville and Solano County utilize the Highway Capacity Manual (HCM) intersection analysis methodology to analyze the operation of signalized and unsignalized intersections. All study intersections included in this analysis are currently unsignalized. The HCM analysis methodology describes the operation of an intersection using a range of Level of Service (LOS) from LOS A (minimal delay) to LOS F (severely congested conditions), based on the corresponding control delay experienced per vehicle for unsignalized intersections.

At unsignalized study intersections, the LOS was calculated using the HCM Methodology (TRB 2016). The Synchro 11 capacity analysis software was used to determine intersection LOS for all study scenarios. Synchro is consistent with the HCM 6th Edition methodology (TRB 2016). HCM methodology utilizes average control delay per vehicle for subject lane to determine LOS for intersections. For Roadway segments, the HCM 7th Edition (TRB 2022) methodology for LOS was calculated using the density of vehicles per mile and per lane of a given segment. Table 4.17-1 shows the LOS for unsignalized intersections and roadway segments under the HCM methodology.

The City of Vacaville General Plan Transportation Element sets thresholds of LOS D or better for all-way and two-way stop-controlled intersections (City of Vacaville 2023: Policy TR-P5.2) The City of Vacaville General Plan also states that Vacaville "endeavors to maintain a LOS C as goal at all intersections and interchanges to facilitate the safe and efficient movement of people, goods, and services" (Policy TR-P5.1).

Table 4.17-1. Levels of Service Criteria

Levels of Service	Unsignalized Intersection Control Delay[1]/ (in seconds)	Roadway Segment Density[2]/ (Vehicles/mile/lane)
A	< 10.0	≤2.0
B	>10.0 to < 15.0	>2.0 - 4.0
C	>15.0 to < 25.0	>4.0 - 8.0
D	>25.0 to < 35.0	>8.0 - 12.0
E	>35.0 to < 50.0	>12.0
F	> 50.0	Demand exceeds capacity

Source:
1/ TRB Highway Capacity Manual 6th Edition (2016).
2/ TRB Highway Capacity Manual 7th Edition (2022), Roadway segment LOS calculated for roadway segments with Posted Speed Limit > 50 mph.

[4] Appendix B (g) (C) (iiii)

2024 Existing Intersection Operations

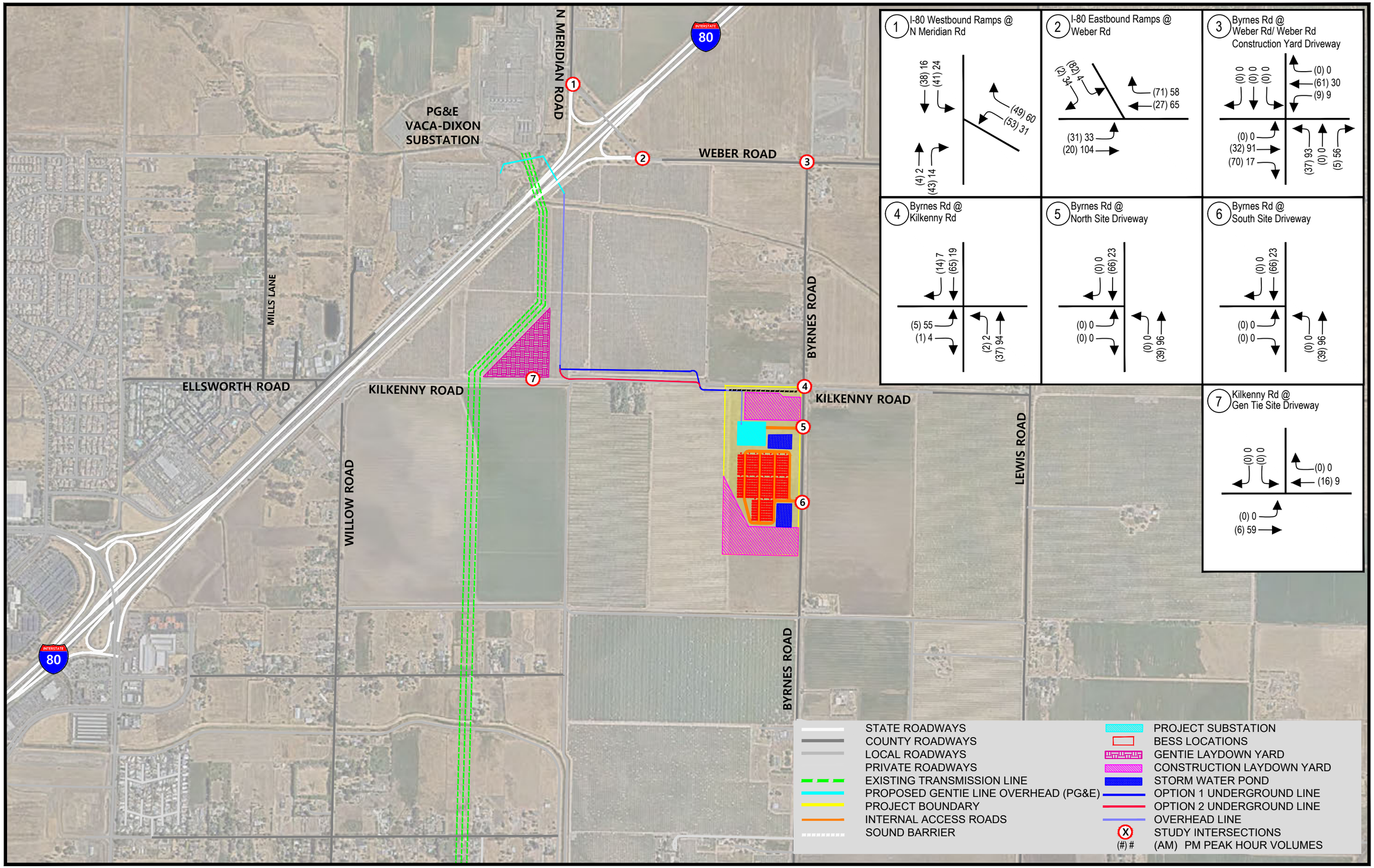
Existing traffic volumes were developed based on new intersection turning movement counts and automatic traffic recorder counts collected at study area intersections and roadways on Wednesday, July 24, 2024. Existing LOS at the study area intersections are provided in Table 4.17-2 below. Existing 2024 weekday morning and evening peak hour and ADTs are shown on Figure 4.17-5. Traffic count data can be found in Appendix 4.17-A.

Table 4.17-2. Intersection Level of Service—Existing Conditions

No.	Intersection and Movement		AM Peak Hour				PM Peak Hour			
			V/C[1/]	Delay[2/]	LOS[3/]	95th Q[4/] (feet)	V/C	Delay	LOS	95th Q (feet)
3	Byrnes Road & Weber Road	NB	0.06	9.60	A	5.0	0.20	10.40	B	20.0
		EB Left	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		WB Left	0.01	7.40	A	0.0	0.01	7.50	A	0.0
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.00	0.00	A	0.0	0.00	0.00	A	0.0
4	Byrnes Road & Kilkenny Road	NB Left	0.00	7.40	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.01	9.10	A	0.0	0.08	9.60	A	7.5
1	I-80 Westbound On-Ramp/Off-Ramp	WB Left	0.06	8.90	A	5.0	0.04	8.90	A	2.5
1	I-80 Westbound On-Ramp/Off-Ramp & North Meridian Road	NB	0.05	8.80	A	5.0	0.02	8.60	A	2.5
		WB Left	0.04	7.40	A	2.5	0.02	7.50	A	2.5
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
2	Weber Road & North Meridian Road	NB Left	0.04	9.00	A	2.5	0.04	9.10	A	2.5
2	I-80 Eastbound On-Ramp/Off-Ramp & Weber Road	EB Left	0.02	7.30	A	2.5	0.03	7.50	A	2.5
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.11	9.70	A	10.0	0.05	9.00	A	2.5

Note: NB = Northbound; SB = Southbound; EB = eastbound; WB = westbound
1/ Volume to Capacity Ratio
2/ Delay in seconds per vehicle
3/ Level of Service
4/ Vehicle queues measures in feet

As shown, all study area intersections operate at well below capacity at LOS B or better operations during both peak periods. Detailed Intersection LOS worksheets are provided in Appendix 4.17-B.



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2024 EXISTING PEAK HOUR TRAFFIC VOLUMES

FIGURE
4.17-5

2024 Existing Roadway Segment Operations

Existing average daily traffic (ADT) volumes, collected in July 2024, are provided in Table 4.17-3. The ADT along Byrnes Road near the Project site was observed to be 570 vehicles.

Table 4.17-3. 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	1,303	1,172	2,475	19%	17%	18%
2	Byrnes Road - South of Kilkenny Road	570	490	1,060	6%	10%	8%

Note: Daily traffic volumes collected on Tuesday July 30, 2024.

As shown in Table 4.17-4, the existing conditions roadway segment capacity analysis indicates that all the study area roadways segments currently operate well below capacity at LOS A. Detailed Roadway Segment LOS worksheets are provided in Appendix 4.17-C.

Table 4.17-4. 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

4.17.3 Impacts Analysis[5,6]

4.17.3.1 Methodology[7]

Peak Construction Phase Trip Generation

Typically, most transportation studies focus on impacts after a Project is constructed and in operation as the expected peak hour traffic generation once in operation is usually higher than that generated under any construction phase or combination of phases. For this Project, however, the reverse is true. As such, the transportation analysis presented below focuses on construction-related impacts as operation of the proposed Project will generate minimal to no peak hour trips and minimal vehicle miles traveled (VMT.)

The Project's vehicular trip generation analysis is based on data provided by the Project Applicant on proposed construction activities. Specific data used include the anticipated construction schedule, maximum number of workers onsite during each construction phase, vendor trips, and truck haul trips required to complete each phase. The Project has a construction schedule of approximately 14 months. Trip generation will vary depending on the specific phase and construction stage, as will each

[5] Appendix B (g) (1)
[6] Appendix B (g) (5) (E)
[7] Appendix B (g) (5) (E) (i)

type of trip. The peak of construction is anticipated to occur during Month 7 and will include the construction of the battery energy storage system (BESS) array, Project substation, and generation tie (gen-tie) components.

Worker vehicle trips and truck haul trips are estimated separately as they represent distinct trip types. Worker vehicle trips and truck haul trips associated with BESS and Project substation installation were assigned to the Project site construction laydown yard on Byrnes Road. Worker vehicle trips and truck haul trips associated with gen-tie installation were assigned to the gen-tie laydown yard on Kilkenny Road. Detailed Project trip generation calculations are provided within the Appendix 4.17-D, with a summary of the data in Table 4.17-5 provided below.

Table 4.17-5. Peak Construction Trip Generation

Trip Type	Daily Trips[1/]	AM Peak Hour			PM Peak Hour		
		Inbound	Outbound	Total	Inbound	Outbound	Total
BESS/Substation Worker	332	83	0	83	0	83	83
Gen-Tie Worker	144	36	0	36	0	36	36
BESS/Substation Truck	130	20	20	40	20	20	40
Gen-Tie Truck	72	11	11	22	11	11	22
TOTAL	**678**	**150**	**31**	**181**	**31**	**150**	**181**

Note:
1/ Assumes 91 BESS/substation construction workers and 40 gen-tie construction workers during peak construction. A 1.10 Vehicle occupancy rate is applied to workers. All workers leave/return for lunch in the middle of the day. 2/ 30% of daily truck trips assumed to occur during the morning and afternoon peak hours.

For the purposes of CEQA, the values shown in Table 4.17-5 provide a conservative scenario in that they represent the peak of Project construction activities.

Operations and Maintenance Trip Generation

The Project will require up to six workers to support onsite and offsite operations and maintenance (O&M) and administrative support functions. Onsite O&M activities will 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 will likely occur infrequently.

One major maintenance inspection will also take place annually, requiring approximately 20 personnel for approximately one week. In addition, approximately every 2 to 3 years the facility will require battery augmentation to maintain Project capacity; a crew of approximately 20 additional workers will be onsite for approximately 3 months to install and connect additional batteries.

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

Trip Distribution

It is anticipated that the construction workforce would commute to the Project site from local communities and report to the designated construction staging yards prior to the beginning of each workday. It was assumed that the construction workforce would be drawn from within an approximately 45-minute drive to the Project site. Project trip distribution patterns were estimated using United States Census worker population data and routes determined based on existing travel times during peak commuting periods. Table 4.17-6 shows the assumed distribution of construction workers. For the purposes of the intersection capacity analysis, the Project trips bound for the BESS staging yard were split between the two proposed site driveways. The analysis assumes 70 percent of the Project trips bound for the BESS site were assigned to the southern Project site driveway on Byrnes Road, while the remaining 30 percent would access the BESS site from the northern Project site driveway. All trips bound for the gen-tie components were assigned to the gen-tie laydown yard on Kilkenny Road. Regional Project trip distribution patterns to and from the Project site and gen-tie laydown yard within the study area are shown in Figure 4.17-6 and Figure 4.17-7.

Table 4.17-6. Distribution of Project Construction Workers

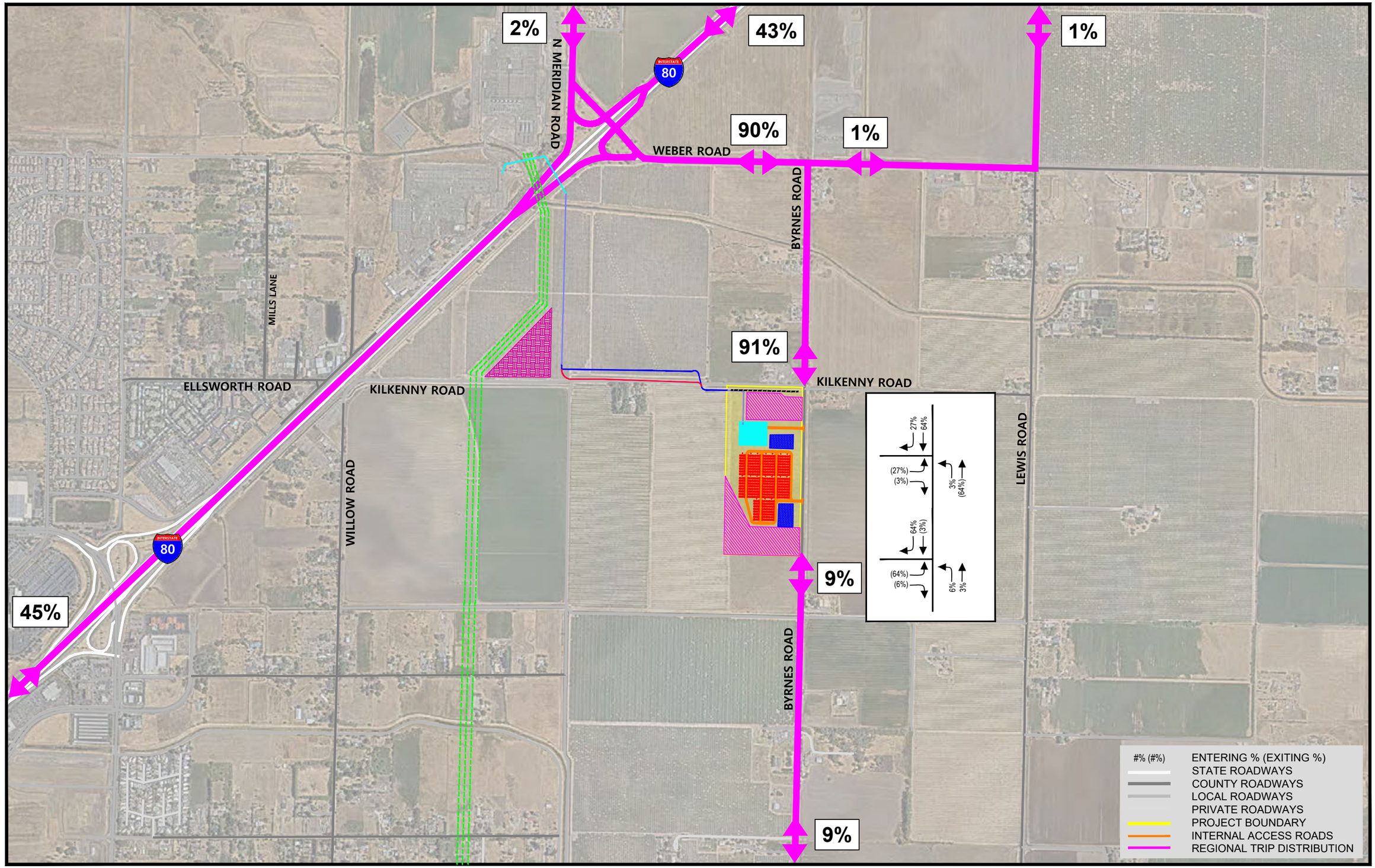
Origin City	Proportion of Workers (%)
Interstate 80 to/from South	45%
Interstate 80 to/from North	43%
Byrnes Road to/from South	9%
N. Meridian Road to/from North	2%
Lewis Road to/from North	1%
TOTAL	**100%**

1/ Based on US Census Worker Population Data (U.S. Census Bureau. 2021). Assumes a 45-minute maximum commute time to the Project Site. Assumes workforce populations closer to the Project Site will draw more potential workers.

The Project truck trip distribution is a reasonable estimate based on the proximity to cities, and commonality of materials like fencing, water, and concrete. Based on these considerations, it is assumed that truck trips will follow the same distribution patterns presented in Table 4.17-6. Supplemental trip distribution analysis is provided in Appendix 4.17-E.

It is anticipated that the work will be completed between 7 a.m. and 5 p.m. Monday-Friday and Saturday (when required) between 8 a.m. and 5 p.m. Peak hours for the Project are expected to be between 6:00 and 7:00 a.m. and 4:00 p.m. and 5:00 p.m., when construction workers will commute to and from the site. It is assumed that all workers will arrive and leave between the peak hours, with the addition of midday trips taken by construction workers for lunch or other work purposes.

Regional trip distribution patterns were then applied to the trip generation estimates summarized in Table 4.17-5. The resulting Project peak construction peak hour trip assignment is shown in Figure 4.17-8.

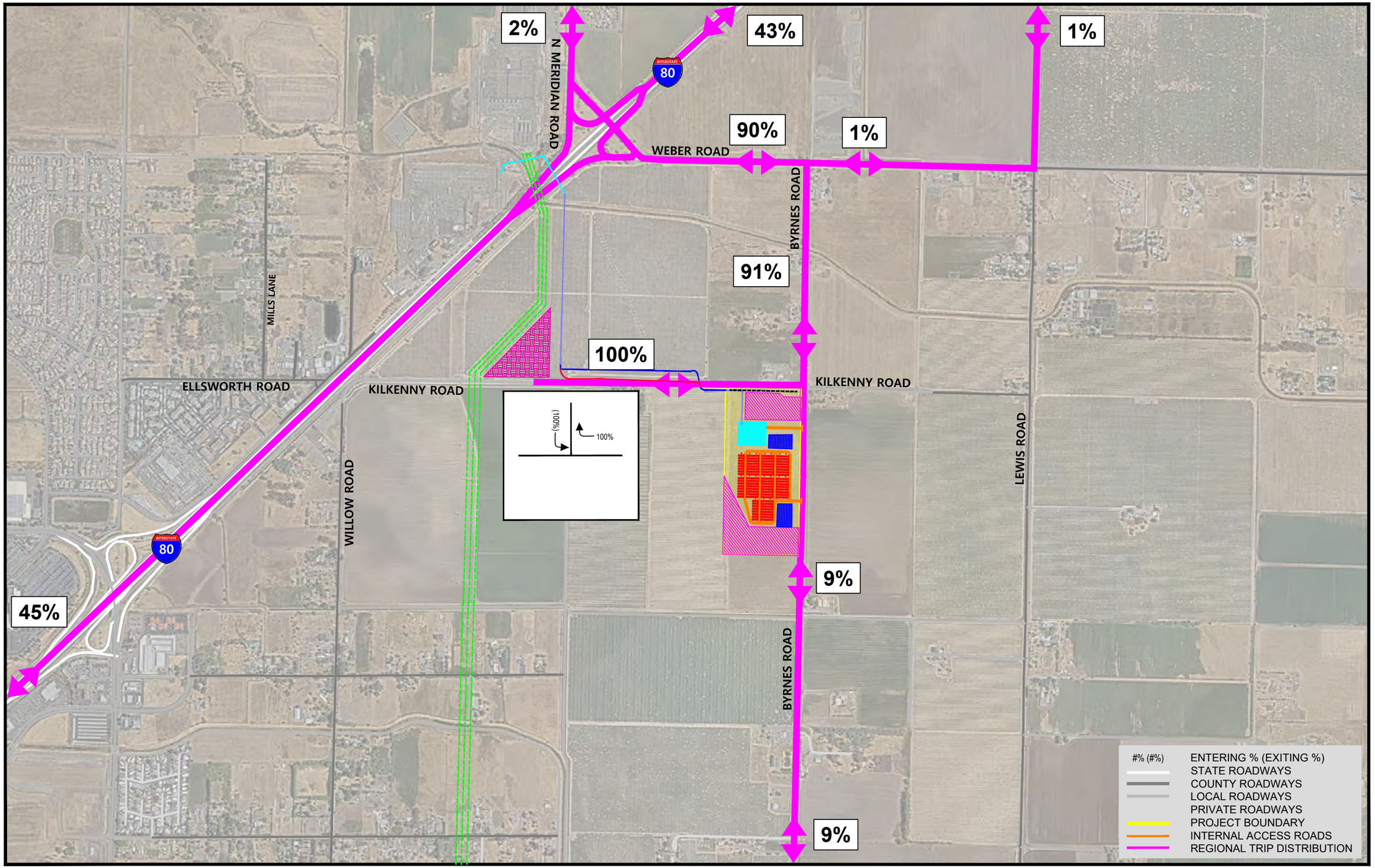


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FIGURE
4.17-6

PROJECT TRIP DISTRIBUTION - PATTERNS TO PROJECT SITE

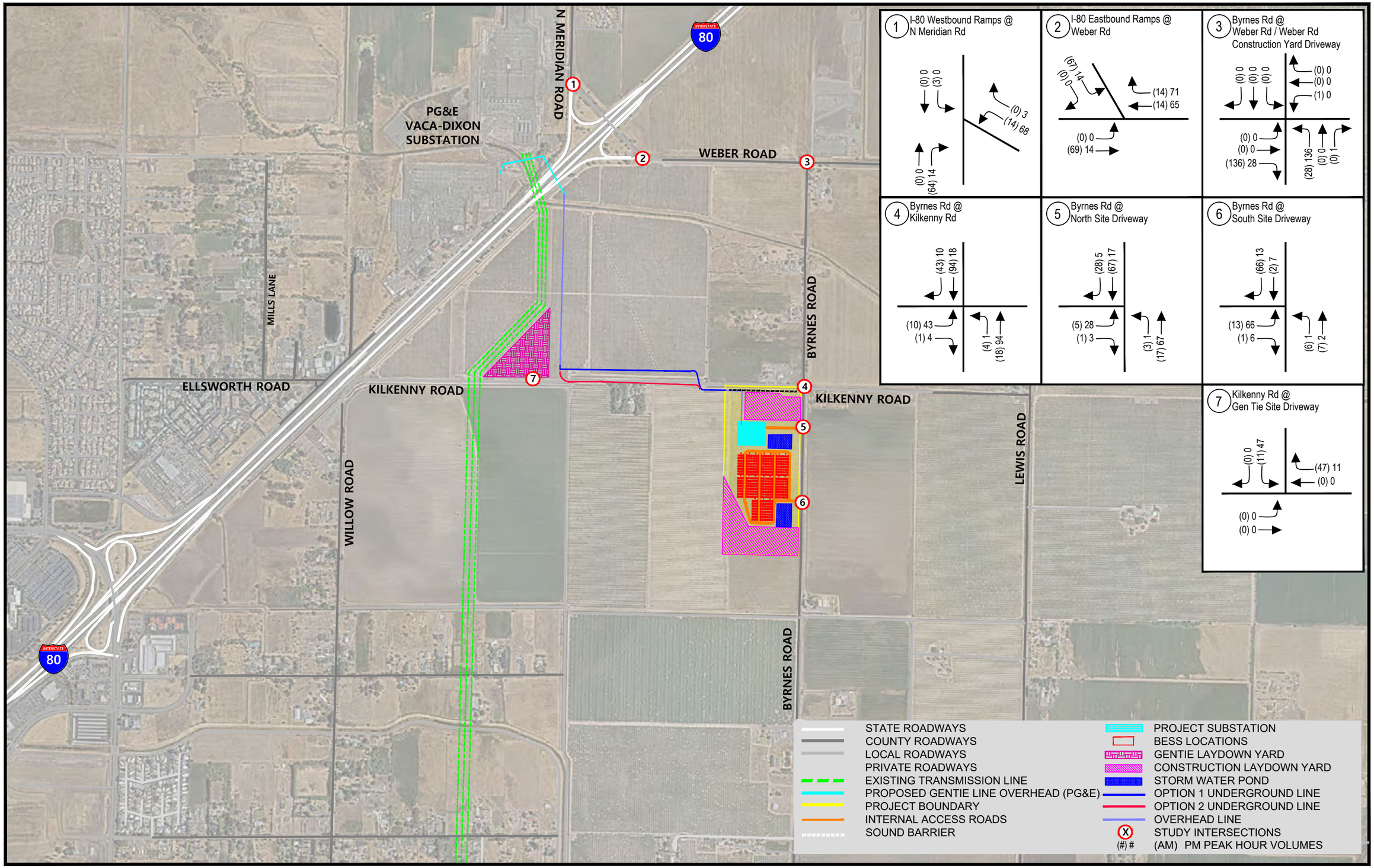


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FIGURE
4.17-7

PROJECT TRIP DISTRIBUTION - PATTERNS TO GEN-TIE CORRIDOR



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FIGURE
4.17-8

PEAK CONSTRUCTION PEAK HOUR TRIP GENERATION

Truck Routes[8]

Based on the Solano County Regional Geographic Information System (GIS) Bridge and Road Restriction Map (Solano County GIS 2024a), Figure 4.17-9 and Table 4.17-7 summarize the location of bridge load restrictions within the vicinity of the Project Site.

Table 4.17-7. Truck Load Restrictions

Bridge ID Number	Figure ID Number	Bridge Location	Load Rating
23C0125	1	Byrnes Road, crossing Gibson Canyon Creek	Purple
23C0188	2	Lewis Road, crossing Gibson Canyon Creek	Purple
23C0189	3	Fox Road, crossing Gibson Canyon Creek	Purple
23C0210	4	Weber Road, crossing Sweeney Creek	Purple
23C0173	5	Willow Road, crossing Horse Creek	Purple
23C0064	6	Byrnes Road, crossing Horse Creek	Purple
23C0200	7	Lewis Road, crossing Horse Creek	Green
23C0204	8	Fox Road, crossing Horse Creek	Purple
23C0166	9	Byrnes Road, crossing New Ulatis Creek	Green
23C0075	10	Lewis Road, crossing New Ulatis Creek	Purple
23C0116	11	Fox Road, crossing New Ulatis Creek	Purple

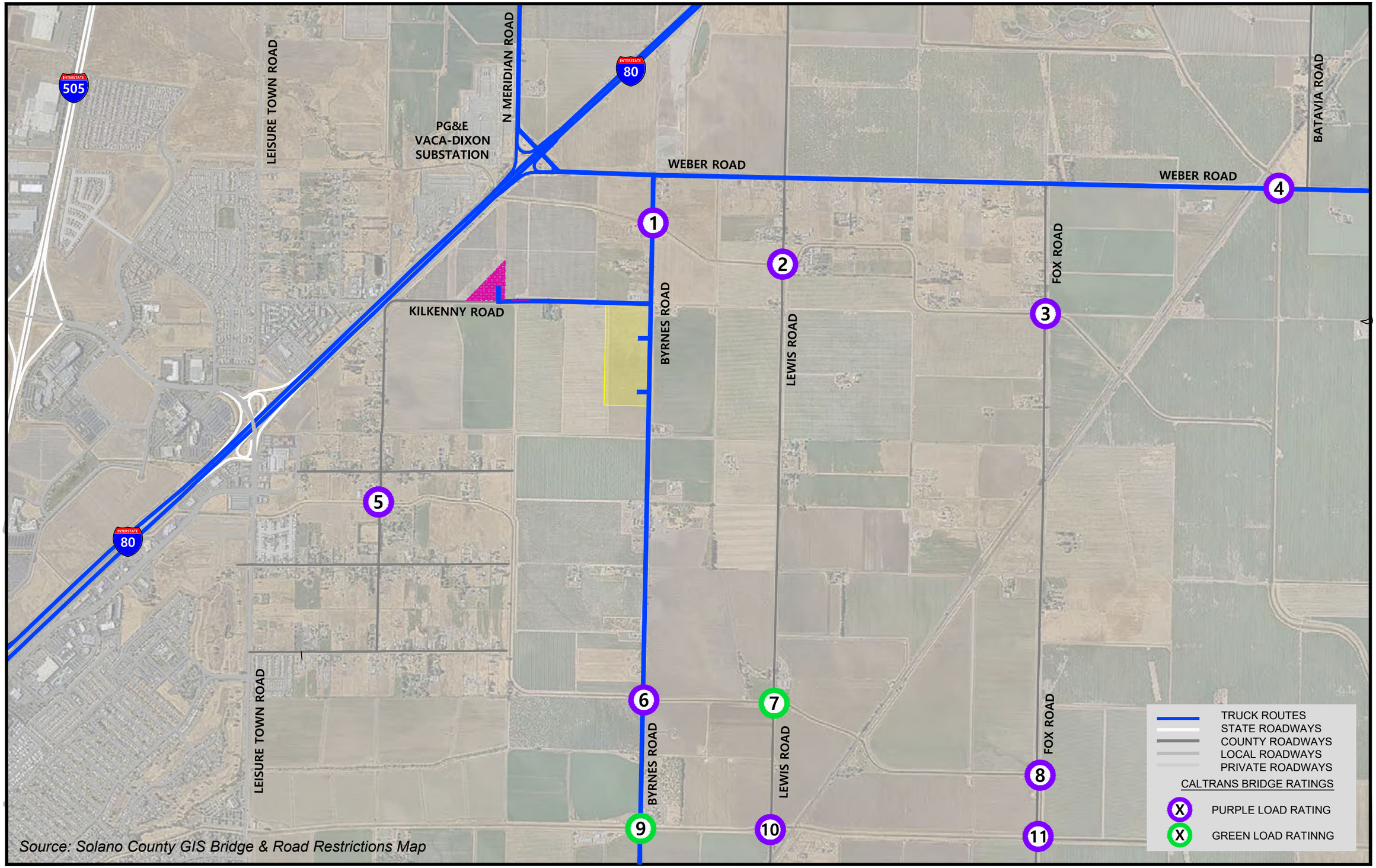
Note: Based on Solano County GIS 2024a

Extralegal Weight Charts are provided by Caltrans and can be found in Appendix 4.17-F. Loads up to 52,000 pounds on a tandem axle can be permitted on bridges with a green load rating. Loads up to 60,000 pounds on a tandem axle can be permitted on bridges with a purple load rating. An evaluation of truck loads bound for the Project site will be completed to ensure compliance with the purple and green load ratings. During the pre-construction phase of the Project once a contractor has been identified, the Applicant will prepare a construction traffic management plan (TMP) that will include the desired truck haul routes for delivery vehicles to use when accessing the site.

4.17.3.2 2024 Existing plus Project Conditions

Project trip assignments shown in Figure 4.17-8 were added to the existing traffic volumes shown in Figure 4.17-4 to estimate the Existing Plus Project traffic volumes. Figure 4.17-10 shows the 2024 Existing Plus Project traffic volumes that were used to evaluate Existing Plus Project roadway and intersection operations.

[8]Appendix B (g) (5) (C) (iv)



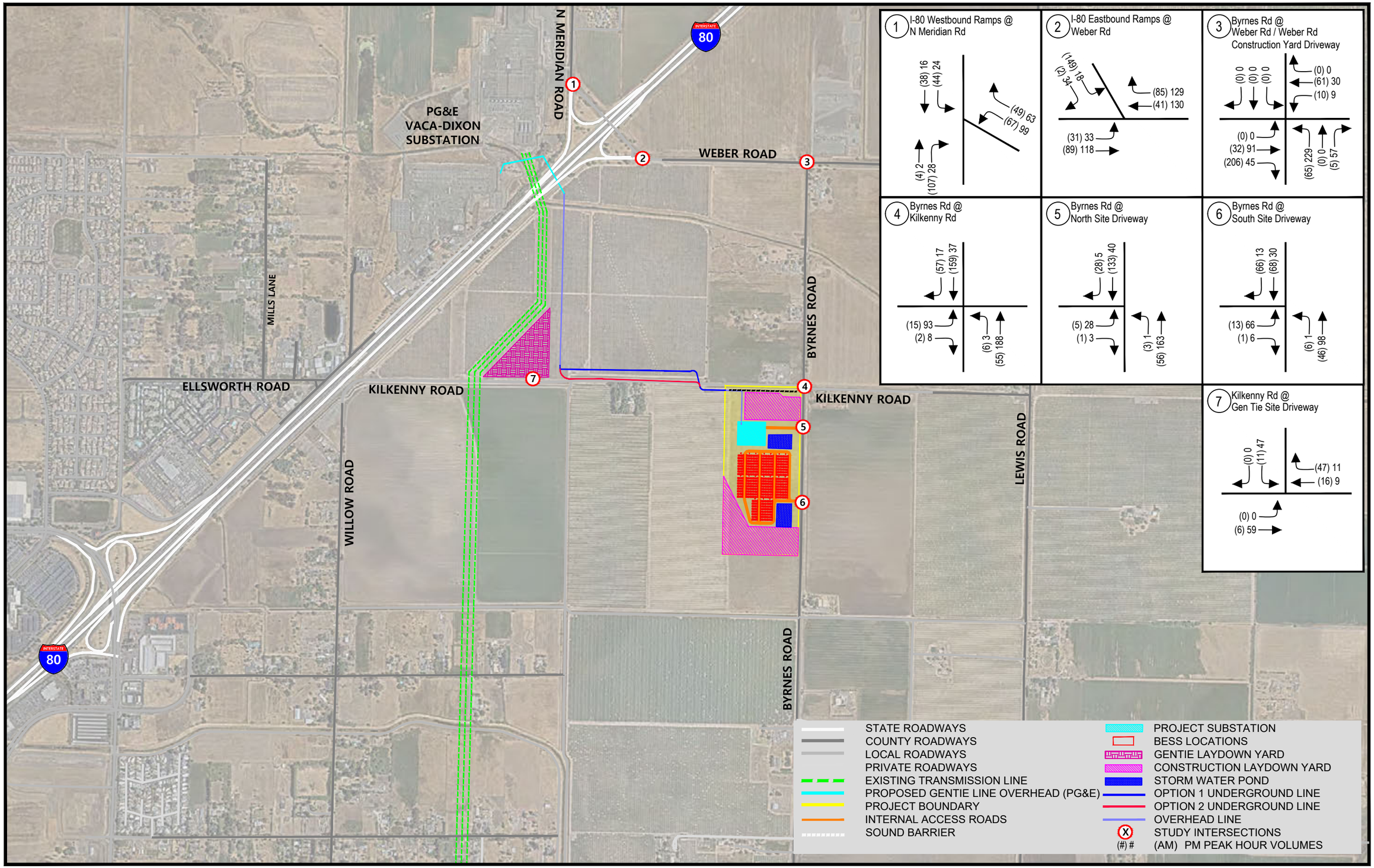
Source: Solano County GIS Bridge & Road Restrictions Map

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FIGURE
4.17-9

TRUCK RESTRICTIONS IN THE VICINITY OF PROJECT SITE



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Solano County, CA

FIGURE
4.17-10

2024 EXISTING PLUS PEAK CONSTRUCTION PEAK HOUR TRAFFIC VOLUMES

2024 Existing plus Project Intersection Operations

As stated in Section 4.17.2.2, the City of Vacaville General Plan focuses on LOS thresholds at intersections in Vacaville. Table 4.17-8 summarizes the Existing plus Project roadway LOS at the study area intersections. As shown in Table 4.17-8, study area intersections are anticipated to operate well below capacity at acceptable LOS B or better during both peak hours with the temporary increase in Project construction traffic, consistent with Plan Policy TR-P5.2. Detailed Intersection LOS worksheets are provided in Appendix 4.17-B.

Table 4.17-8. Level of Service—Existing plus Project Conditions

No.	Intersection and Movement		AM Peak Hour				PM Peak Hour			
			V/C[1/]	Delay[2/]	LOS[3/]	95th Q[4/] (feet)	V/C	Delay	LOS	95th Q (feet)
3	Byrnes Road & Weber Road	NB	0.10	10.50	B	7.5	0.41	12.70	B	50.0
		EB Left	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		WB Left	0.01	7.70	A	0.0	0.01	7.50	A	0.0
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.00	0.00	A	0.0	0.00	0.00	A	0.0
4	Byrnes Road & Kilkenny Road	NB Left	0.01	7.70	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.03	10.20	B	2.5	0.18	11.20	B	17.5
5	Byrnes Road & Site Driveway (North)	NB Left	0.00	7.60	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.01	9.70	A	0.0	0.04	9.80	A	2.5
6	Byrnes Road & Site Driveway (South)	NB Left	0.01	7.50	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.02	9.50	A	2.5	0.09	9.60	A	7.5
7	Kilkenny Road & Gen-Tie laydown Yard	EB Left	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.01	8.80	A	0.0	0.06	9.10	A	5.0
1	I-80 Westbound On-Ramp/Off-Ramp	WB Left	0.07	9.00	A	5.0	0.12	9.20	A	10.0
1	I-80 Westbound On-Ramp/Off-Ramp & North Meridian Road	NB	0.12	9.00	A	10.0	0.03	8.70	A	2.5
		WB Left	0.04	7.40	A	2.5	0.07	7.60	A	5.0
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
2	Weber Road & North Meridian Road	NB Left	0.04	9.10	A	2.5	0.04	9.60	A	2.5
2	I-80 Eastbound On-Ramp/Off-Ramp & Weber Road	EB Left	0.02	7.30	A	2.5	0.03	7.70	A	2.5
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.22	11.10	B	22.5	0.07	10.00	B	5.0

Note: NB = Northbound; SB = Southbound; EB = eastbound; WB = westbound
1/ Volume to Capacity Ratio
2/ Delay in seconds per vehicle
3/ Level of Service
4/ Vehicle queues measures in feet

2024 Existing plus Project Roadway Segment Operations

As shown in Table 4.17-9, the Existing plus Project roadway segment capacity analysis indicates that all the study area roadways segments will operate well below capacity at LOS B or better. Detailed Roadway Segment LOS worksheets are provided in Appendix 4.17-C.

Table 4.17-9. Roadway Segment Level of Service—Existing plus Project 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	2.3	B	0.7	A	1.0	A	2.5	B
2	Byrnes Road - South of Kilkenny Road	0.1	A	0.9	A	1.2	A	0.2	A

Note: TRB (2022) methodology

4.17.3.3 2026 Cumulative (without Project) Conditions

This section presents the results of a cumulative condition analysis that was conducted for a short-term, 2-year horizon period where traffic associated with other approved and pending Projects in the study area is added to the 2024 existing traffic volumes.

A list of cumulative projects within the vicinity of the Project site was obtained from the City of Vacaville Community Development Department (2024a and 2024b) Residential and Non-Residential Reports and the Solano County Planning Commission. Table 4.17-10 provides a summary of the cumulative projects within the vicinity of the Project site.

Table 4.17-10. 2026 Cumulative Background Projects Summary

No.	Project Name	Location	Description	Distance from Project	Potential for Impact?
NR-9	Weber Road Construction Yard	North of Weber Road, South of I-80	Request to establish a temporary construction and materials yard with space for up to six tenants.	0.5 Mile	**Yes**, trips to this site are expected to be routed through the study intersection thus the proposed Project would cause minor impacts to the operations of this Project.
NR-10	Clear Channel Outdoor Digital Billboard Conversion	South of I-80, north of Kilkenny Road	Request to convert one existing static billboard into a new digital billboard. The sign would have a maximum height of 45 ft. and would contain a digital display area of 648 sq. ft.	1.0 Mile	**No**; No trips are expected to be generated by this proposed land use.

No.	Project Name	Location	Description	Distance from Project	Potential for Impact?
NR-38	Camping World Service Bay Expansion	5051 Quinn Road	Modification request to add three new maintenance service bays to the existing building.	1.4 Miles	**No**; Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-2	North Village Unit 7 (Avondale & Bristow)	W. of North Village Pkwy. Aster Road	295 Unit Residential Development.	2.2 Miles	**No**, Current aerial imagery shows Project complete.
R-3	North Village Area Plan 2	E. of Interstate 505, S. of Midway Road	1251 Unit Residential Development.	2.2 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-4	North Village - Lot D/H	W. of North Village Pkwy. N. of Vacaville Center Dr.	84 Unit Residential Development.	1.9 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-4	North Village - Lot E	E. of North Village Pkwy. SW. of Twilight St.	11 Unit Residential Development.	1.9 Miles	
R-6	Greentree	W. of Leisure Town Road	909 Unit Residential Development.	2.1 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-15	Raysons Development	E. of Leisure Town Road S. of Maplewood Subdivision	1019 Unit Residential Development.	2.2 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-16	Donaldson-Ramos Development	E. of Leisure Town Road N. of Hawkins Road	2931 Unit Residential Development.	2.5 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-35	Greentree Apartments	W. of Leisure Town Road N. of Giley Way	240 Unit Residential Development.	1.9 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-7	The Farm at Alamo Creek	E. of Leisure Town Rd. N. of Elmira Rd.	768 Unit Residential Development.	3.0 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.
R-8	The Fields at Alamo Creek	E. of Leisure Town Road S. of Hawkins Road	241 Unit Residential Development.	2.75 Miles	**No;** Access to and from this site is expected to utilize Exit 57 on I-80 to travel north/south and is not expected to impact study area roadways.

Note: NR – Non-Residential R – Residential; Vacaville Community Development Department Residential/Non-Residential Activity Reports, March 2024.

Based on review of the Project characteristics, status, and locations of cumulative Projects, the following Project was identified that would likely add traffic to study area roadway segments and intersections in the design year 2026:

- Weber Road Construction Yard

The locations of the Weber Road Construction Yard Project and its anticipated traffic volumes are shown in Figure 4.17-11. Traffic associated with the cumulative background Project included for analysis was based on traffic studies prepared by others for those Projects. Table 4.17-11 provides a summary of the daily and peak hour trip generation estimates this Project.

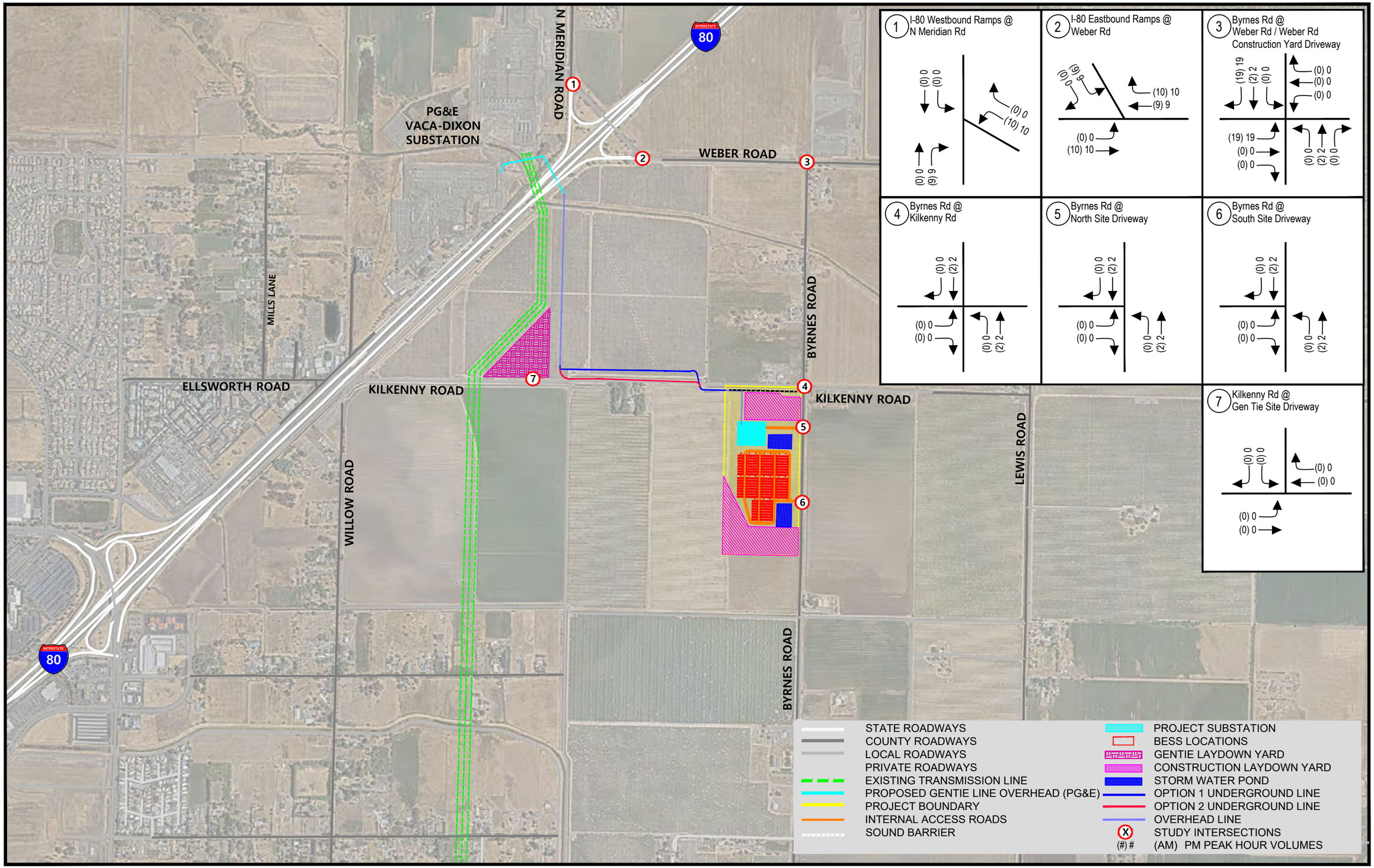
Table 4.17-11. 2026 Cumulative Background Projects Trip Generation Summary

No.	Project Description	Daily Trips	AM Peak Hour			PM Peak Hour		
			In	Out	Total	In	Out	Total
1	Weber Road Construction Yard[1/]	140	21	21	42	21	21	42

1/ Stantec 2023; Assumes 30% of daily trucking activity occurs during peak hours.

Using data available in the traffic studies prepared by others for the cumulative Projects, the cumulative Projects were distributed through the study area network, primarily along Weber Road, Byrnes Road, and Interstate 80. The cumulative Project trip assignment is documented in the Traffic Projection Model in Appendix 4.17-G.

Trips associated with the cumulative Projects were then added to the 2024 Existing Conditions traffic volumes at study area roadways and intersections. Resulting weekday daily, morning and evening peak hour traffic volumes for the 2026 Cumulative (Without Project) conditions are presented in Figure 4.17-12.

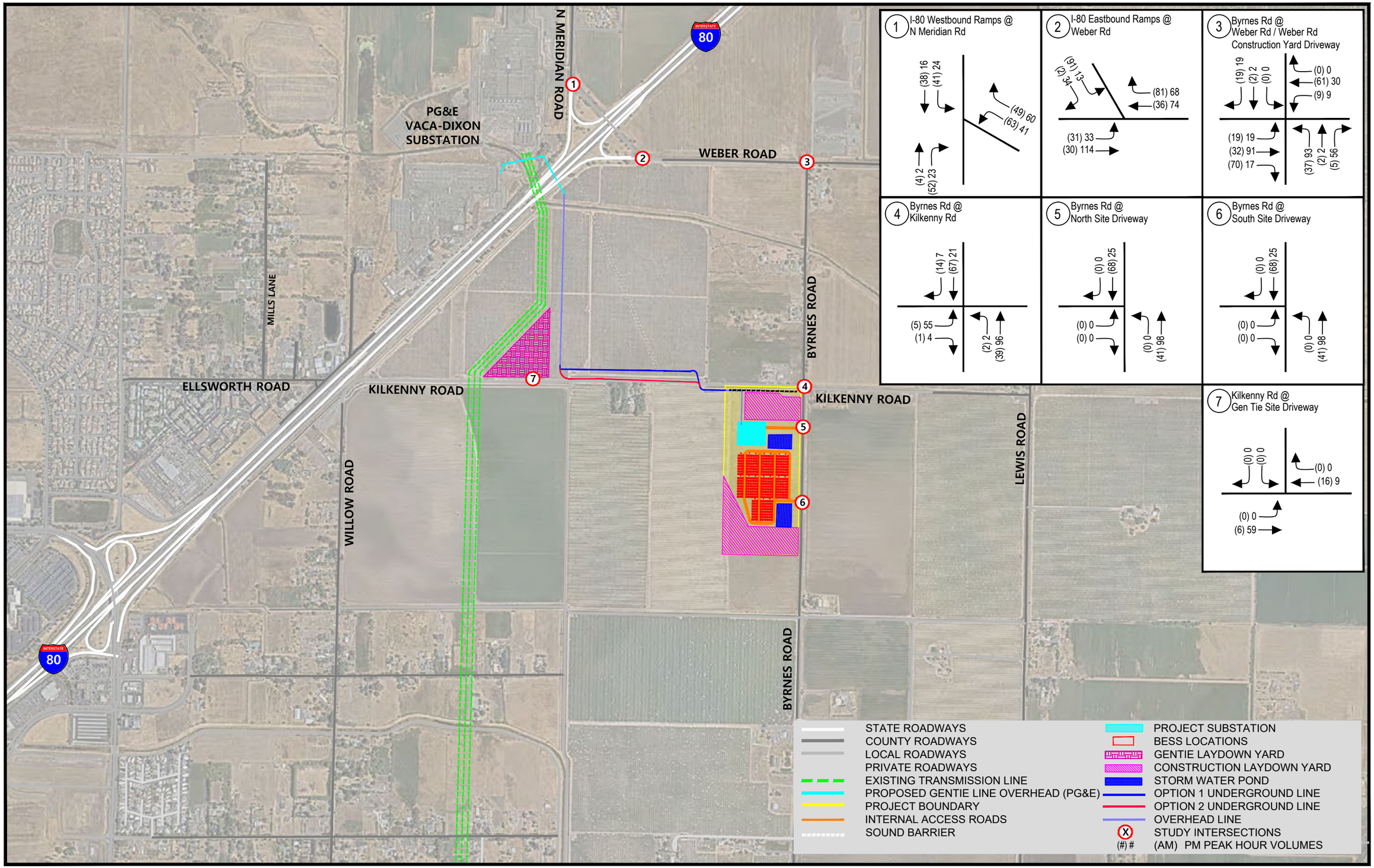


TETRA TECH

Corby Battery Energy Storage System Project
Solano County, CA

FIGURE
4.17-11

2026 CUMULATIVE PROJECT LOCATION AND PEAK HOUR TRAFFIC VOLUMES



TETRA TECH

Corby Battery Energy Storage System Project
Solano County, CA

FIGURE
4.17-12

2026 CUMULATIVE (WITHOUT PROJECT) PEAK HOUR TRAFFIC VOLUMES

2026 Cumulative (Without Project) Intersection Operations

An intersection operations analysis was conducted for the study area to evaluate 2026 Cumulative (Without Project) weekday morning and evening peak hour conditions. Intersection operations were calculated using the LOS methodology described in Section 4.17.2.2. LOS worksheets are provided in Appendix 4.17-B. As shown in Table 4.17-12, study area intersections are anticipated to operate below capacity at LOS B or better during both of the weekday commuter peak hours.

Table 4.17-12. Level of Service—Cumulative Conditions

No.	Intersection & Movement		AM Peak Hour				PM Peak Hour			
			V/C[1/]	Delay[2/]	LOS[3/]	95th Q[4/] (feet)	V/C	Delay	LOS	95th Q (feet)
3	Byrnes Road & Weber Road	NB	0.06	10.20	B	5.0	0.23	11.10	B	22.5
		EB Left	0.01	7.40	A	0.0	0.01	7.30	A	0.0
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		WB Left	0.01	7.40	A	0.0	0.01	7.50	A	0.0
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.02	8.90	A	2.5	0.03	9.60	A	2.5
4	Byrnes Road & Kilkenny Road	NB Left	0.00	7.40	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.01	9.10	A	0.0	0.09	9.60	A	7.5
1	I-80 Westbound On-Ramp/Off-Ramp	WB Left	0.07	9.00	A	5.0	0.05	8.90	A	2.5
1	I-80 Westbound On-Ramp/Off-Ramp & North Meridian Road	NB	0.06	8.80	A	5.0	0.03	8.60	A	2.5
		WB Left	0.04	7.40	A	2.5	0.03	7.50	A	2.5
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
2	Weber Road & North Meridian Road	NB Left	0.04	9.10	A	2.5	0.04	9.20	A	2.5
2	I-80 Eastbound On-Ramp/Off-Ramp & Weber Road	EB Left	0.02	7.30	A	2.5	0.03	7.50	A	2.5
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.13	9.90	A	10.0	0.06	9.40	A	5.0

Note: NB = Northbound; SB = Southbound; EB = eastbound; WB = westbound
1/ Volume to Capacity Ratio
2/ Delay in seconds per vehicle
3/ Level of Service
4/ Vehicle queues measures in feet

2026 Cumulative (Without Project) Roadway Segment Operations

As shown in Table 4.17-13, the Cumulative (without Project) roadway segment capacity analysis indicates that all the study area roadways segments will operate well below capacity at LOS A or better. Detailed Roadway Segment LOS worksheets are provided in Appendix 4.17-C.

Table 4.17-13. Roadway Segment Level of Service - Cumulative Conditions

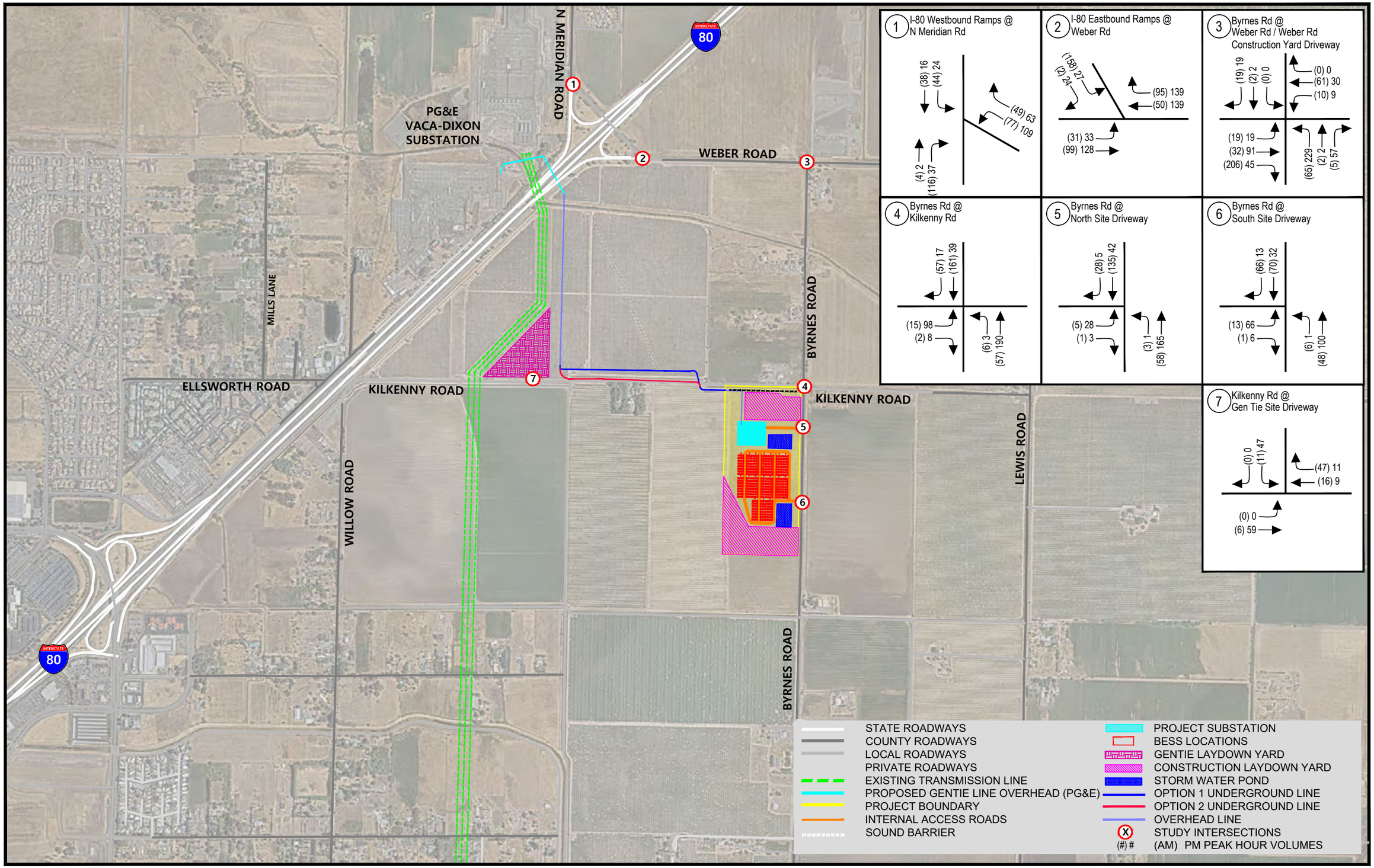
No.	Segment	AM Peak Hour				PM Peak Hour			
		Direction 1 (NB/EB)		Direction 2 (SB/WB)		Direction 1 (NB/EB)		Direction 2 (SB/WB)	
		VEH DEN	LOS	VEH DEN	LOS	VEH DEN	LOS	VEH DEN	LOS
1	Weber Road -West of Byrnes Road	0.8	A	0.7	A	0.9	A	0.9	A
2	Byrnes Road - South of Kilkenny Road	0.1	A	0.2	A	0.4	A	0.1	A

Note: TRB (2022) Methodology

4.17.3.4 2026 Cumulative plus Project Conditions

This section documents impacts on study area intersections and roadway segments related to construction-related Project traffic under 2026 Cumulative Plus Project (peak construction phase) conditions.

The 2026 Cumulative Plus Project conditions consist of Project-related traffic added to the 2026 Cumulative (Without Project) Conditions traffic volumes. Project trips shown in Figure 4.17-8 for peak construction activities were added to the 2026 Cumulative (Without Project) condition traffic volumes shown in Figure 4.17-12. The resulting 2026 Cumulative Plus Project traffic volumes are shown in Figure 4.17-13.



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Solano County, CA

FIGURE
4.17-13

2026 CUMULATIVE PLUS PEAK CONSTRUCTION PEAK HOUR TRAFFIC VOLUMES

2026 Cumulative plus Project Intersection Operations

As shown in Table 4.17-14, study area intersections are anticipated to operate well below capacity at acceptable LOS B or better during both peak hours with the temporary increase in Project construction traffic, consistent with Plan Policy TR-P5.2. Detailed Intersection LOS worksheets are provided in Appendix 4.17-B.

Table 4.17-14. Level of Service—Cumulative plus Project Conditions

No.	Intersection & Movement		AM Peak Hour				PM Peak Hour			
			V/C[1/]	Delay[2/]	LOS[3/]	95th Q[4/] (feet)	V/C	Delay	LOS	95th Q (feet)
3	Byrnes Road & Weber Road	NB	0.12	11.20	B	10.0	0.46	14.30	B	62.5
		EB Left	0.01	7.40	A	0.0	0.01	7.30	A	0.0
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		WB Left	0.01	7.70	A	0.0	0.01	7.50	A	0.0
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.02	9.00	A	2.5	0.03	9.70	A	2.5
4	Byrnes Road & Kilkenny Road	NB Left	0.01	7.70	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.03	10.20	B	2.5	0.18	11.30	B	17.5
5	Byrnes Road & Site Driveway (North)	NB Left	0.00	7.60	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.01	9.70	A	0.0	0.04	9.90	A	2.5
6	Byrnes Road & Site Driveway (South)	NB Left	0.01	7.50	A	0.0	0.00	7.30	A	0.0
		NB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		EB	0.02	9.50	A	2.5	0.09	9.70	A	7.5
7	Kilkenny Road & Gen Tie laydown Yard	EB Left	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.01	8.80	A	0.0	0.06	9.10	A	5.0
1	I-80 Westbound On-Ramp/Off-Ramp	WB Left	0.08	9.00	A	7.5	0.13	9.30	A	10.0
1	I-80 Westbound On-Ramp/Off-Ramp & North Meridian Road	NB	0.12	9.10	A	10.0	0.04	8.70	A	2.5
		WB Left	0.05	7.40	A	5.0	0.08	7.60	A	7.5
		WB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
2	Weber Road & North Meridian Road	NB Left	0.04	9.20	A	2.5	0.05	9.60	A	2.5
2	I-80 Eastbound On-Ramp/Off-Ramp & Weber Road	EB Left	0.02	7.40	A	2.5	0.03	7.70	A	2.5
		EB Through	0.00	0.00	A	0.0	0.00	0.00	A	0.0
		SB	0.24	11.40	B	22.5	0.09	10.40	B	7.5

Note: NB = Northbound; SB = Southbound; EB = eastbound; WB = westbound
1/ Volume to Capacity Ratio
2/ Delay in seconds per vehicle
3/ Level of Service
4/ Vehicle queues measures in feet

2026 Cumulative plus Project Roadway Segment Operations

As shown in Table 4.17-15, the Cumulative plus Project roadway segment capacity analysis indicates that all the study area roadways segments will operate well below capacity at LOS B or better. Detailed Roadway Segment LOS worksheets are provided in Appendix 4.17-C.

Table 4.17-15. Roadway Segment Level of Service - Cumulative plus Project 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	2.6	B	0.9	A	1.3	A	2.7	B
2	Byrnes Road - South of Kilkenny Road	0.1	A	0.9	A	1.2	A	0.2	A

Note: TRB (2022) Methodology

4.17.3.5 Vehicle Miles Traveled[9]

CEQA Guidelines Section 15064.3(b) was adopted in December 2018 by the California Natural Resources Agency. These revisions to the CEQA Guidelines criteria focus the analysis of traffic impacts from driver delay to reduction of greenhouse gas (GHG) emissions, creation of multimodal networks, and diversity of land uses. The revisions required lead agencies to evaluate transportation impacts based on VMT beginning July 1, 2020. VMT is a measure of the total number of miles driven to or from a project and is sometimes expressed as an average per trip or per person.

The City of Vacaville has adopted VMT-based transportation significance thresholds for non-residential uses such as Office, Highway Commercial, General Retail, Industrial, and Warehouse (City of Vacaville 2021). Where no VMT threshold has yet been adopted, the Office of Planning and Research's *Technical Advisory on Evaluating Transportation Impacts in CEQA* (OPR 2018) provides guidance:

> *The VMT metric can support the three statutory goals: "the reduction of greenhouse gas emissions, the development of multimodal transportation networks, and a diversity of land uses" (California Legislature's Public Resources Code [PRC], § 21099, subd. (b)(1); emphasis added) (PRC 2019). However, in order for it to promote and support all three, lead agencies should select a significance threshold that aligns with state law on all three. State law concerning the development of multimodal transportation networks and diversity of land uses requires planning for and prioritizing increases in complete streets and infill development, but it does not mandate a particular depth of implementation that could translate into a particular threshold of significance. Meanwhile, the State has clear quantitative targets for GHG emissions reduction set forth in law and based on scientific consensus, and the depth of VMT reduction needed to*

[9] Appendix B (g) (5) (C) (i), Appendix B (g) (5) (C) (ii)

> *achieve those targets has been quantified. Tying VMT thresholds to GHG reduction also supports the two other statutory goals. Therefore, to ensure adequate analysis of transportation impacts, the Governor's Office of Planning and Research (OPR) recommends using quantitative VMT thresholds linked to GHG reduction targets when methods exist to do so.*

Per State CEQA Guidelines Section 15064.3(b)(3), a qualitative VMT analysis of construction trips is appropriate, given that the construction-related trips and traffic volume are temporary and would cease after construction is completed; thus, they would not change transportation or traffic patterns in the long term.

During the 14-month construction phase of the Project, workers and trucks would travel to and from the site daily. The location of the site limits the opportunity to improve how efficiently workers reach the site. Carpooling will be recommended to the Project applicant as an effective method to reduce VMT in the region during construction. Few, if any, alternative means to reach the Project site are available. The ability to use public transit is limited by distance from the nearest transit stop to the site (2.3 miles). Additionally, Vacaville City Coach Route 4 runs on an hourly schedule on weekdays.

The effective construction workforce of a given city is proportional to the distance that city is from the Project site. Cities such as Vacaville, Dixon, Fairfield, and Davis offer shorter commutes and thus are more attractive to potential workers than cities such as Napa, Vallejo, and Sacramento. The average trip length for workers, haul truck, and vendor trucks is expected to be 22.1 miles. As stated in Appendix 4.17-D, the Applicant has provided more detailed expected trip lengths for Import Fill Trips, Water Truck Trips, and Biomass Hauling Trips. During the peak construction period, the Project will generate a daily VMT of 9,767 vehicle-miles over 678 trips. During peak construction, the daily worker VMT per capita is expected to be 45.5 miles. During peak construction, the daily VMT per truck is expected to be 37.7 miles. Refer to Appendix 4.17-H for a more detailed summary.

Once construction is completed, no permanent O&M staff will be located at the Project site. The BESS will be uncrewed and operational control will be from an offsite control room through a supervisory control and data acquisition system. The Project will require up to six workers to support onsite and offsite O&M and administrative support functions. Onsite O&M activities will 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 will likely occur infrequently. Therefore, operational-related trips are presumed to cause a less than significant transportation impact.

4.17.3.6 CEQA Impact Analysis

IMPACT 4.17-1: Would the Project conflict with a program, plan, ordinance or policy addressing the circulation system, including transit, roadway, bicycle and pedestrian facilities? (Less than significant Impact)

All study roadways and intersections will continue to operate within acceptable County and Caltrans operational standards under Existing plus Project Conditions and the Cumulative plus Project

Conditions. Most maintenance and construction activities associated with the Project will be contained within the Project site and are not 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 will be impacted by Project-generated construction traffic.

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 will occur primarily during daylight hours and will 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 will be related to temporary construction whose short-term traffic increases end when construction activities are completed. Implementation of a TMP is a standard practice that will reduce any short-term operational effects of construction traffic. Strategies in the TMP will focus on safety related to truck traffic to and from the site.

For these reasons, the Project will not conflict with a plan, ordinance, or policy addressing the circulation system, including transit, roadway, bicycle, and pedestrian facilities. Therefore, the Project will result in less than significant impacts to the performance of the local circulation system.

IMPACT 4.17-2: Would the Project conflict or be inconsistent with CEQA Guidelines section 15064.3, subdivision (b)? (Less than Significant Impact)[10]

VMT

The Project will represent an increase in VMT during the 14-month construction period compared with the existing agricultural cultivation uses at the Project location. During the peak construction period, the Project will generate a daily VMT of 9,767 vehicle-miles over 678 trips. During peak construction, the daily worker VMT per capita is expected to be 45.5 miles. During peak construction, the daily VMT per truck is expected to be 37.7 miles.

Once construction is completed, no permanent O&M staff will be located at the Project site. The BESS will be uncrewed and operational control will be from an offsite control room through a supervisory control and data acquisition system. The Project will require up to six workers to support onsite and offsite O&M and administrative support functions. Onsite O&M activities will 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 will likely occur infrequently. The irregular visits will result in a daily vehicle volumes of less than 30 trips per day, below any threshold of measurable or adverse effect. Trip generation for

[10] Appendix B (g) (5) (C)

decommissioning is assumed to be substantially less than Project construction but more than operational trips.

As per OPR (2018) guidance, Projects that generate fewer than 110 trips per day generally may be assumed to cause a less than significant transportation impact. This guidance is for permanent development and not for short-duration construction impacts. As discussed above, implementation of a TMP will reduce any short-term operational effects of construction traffic. For these reasons, the Project as a whole will result in less than significant sustained impacts related to VMT.

Diversity of Land Use

Diversity of land use is a more difficult criteria to quantify for a comparative analysis. According to CEQA guidance (OPR 2018),

> *State law concerning the development of multimodal transportation networks and diversity of land uses requires planning for and prioritizing increases in complete streets and infill development but does not mandate a particular depth of implementation that could translate into a particular threshold of significance.*

The Project will diversify land use by changing the current use from undeveloped cropland grazing land to renewable energy storage. While the Project will increase the VMT from undeveloped to developed conditions, nearly all of the VMT are added during a relatively short construction time window. The expected facility maintenance will generate infrequent and light traffic during operations, and will not impact peak hour traffic. Development of the Project will, therefore, support California's statutory energy goals—reduction of GHGs through development of a storage facility for renewable energy, development of multimodal transportation networks, and a diversity of land uses.

IMPACT 4.17-3: 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)? (Less than Significant Impact)

The Project will not permanently alter any roadways in a way that would result in a design feature that could substantially increase hazards. The Project will construct two new site access driveways along the Byrnes Road and one access road along Kilkenny Road that will conform to County sight distance standards (Solano County 2006) and will not introduce new hazards. All Project infrastructure will be set back from public intersections to avoid any sight distance hazards.

As discussed in greater detail in Section 3.0, *Electrical Transmission,* energy will be transported from the Project substation to the nearby PG&E Vaca-Dixon Substation through a 1.1-mile-long, 230-kilovolt (kV) gen-tie transmission line sited on a gen-tie corridor. The first section of the gen-tie corridor will begin at the northwest corner of the Project site and will proceed west parallel to (and crossing) Kilkenny Road for a distance of approximately 2,000 feet. This east-west portion of the gen-tie corridor will be underground, with two gen-tie corridor options being considered:

1) **Underground Route Option #1** would be located within easements secured from private landowners and Solano Irrigation District and encroachment permits from Solano County and City of Vacaville. The route would proceed approximately 300 feet west of the Project site on

private land located on the south side of Kilkenny Road before turning 90 degrees and crossing under Kilkenny Road (via trenchless construction methods) and then turning 90 degrees again to continue approximately 1,600 feet west on private land located on the northside of Kilkenny Road. This option would require a temporary lane closure associated with equipment set-up on one side of the street for approximately 2 to 4 weeks.

2) **Underground Route Option #2** would be located within easements secured from the private landowner of the parcel immediately west of the Project site and an encroachment permit from the City of Vacaville to install the gen-tie within the City-maintained Kilkenny Road right-of-way. This route option would proceed approximately 300 west of the Project site on private land located on the south side of Kilkenny Road before turning 90 degrees to enter the road right-of-way before turning west again and continuing approximately 1,600 feet west within the Kilkenny Road right-of-way. This option would require a temporary roadway closure of a portion Kilkenny Road for approximately 8 to 10 weeks.

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 Appendix 4.17-I).

During construction, slow-moving oversize/overweight trucks could potentially disrupt the movement of slow-moving farm equipment on Byrnes Road in the Project vicinity. However, standard traffic control, such as signage and use of orange cones and flaggers, will be implemented on the roadway if necessary.

The Project land use is considered a compatible use as discussed in Section 4.11, *Land Use and Planning*, of this application. For these reasons, the Project will result in less than significant impacts related to increased hazards due to design features or incompatible uses.

Some of the heavy construction equipment and facility materials may be transported to the site by oversize/overweight vehicles. The use of oversize/overweight vehicles during construction can create a hazard to the public by limiting motorist views on roadways and by the obstruction of space.

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 and Colusa County may require oversize/overweight load permits, which would specify whether California Highway Patrol escorts are required during oversize/overweight vehicle trips. Given the rural nature of the area roads and relatively low traffic volumes, construction vehicles are not anticipated to cause hazards to other roadway users traveling to and from the Project site. Furthermore, the Project will not include a design feature or utilize vehicles with incompatible uses that would create a hazard on the roadways surrounding the Project site.

IMPACT 4.17-4: Would the Project result in inadequate emergency access? (Less than Significant Impact)

The Project will not permanently alter any roadways or create any traffic conditions that would impede emergency access. Furthermore, the analyzed Project-generated traffic will be related to temporary construction-related traffic increases that will end when construction is completed.

As discussed in greater detail under Impact 4.17-3 above and in Section 3.0, *Electrical Transmission,* energy will 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, construction of which will cross under and run parallel to or potentially within the Kilkenny Road right-of-way.

The Project parcel is bound on all sides by existing agricultural lands, with rural residences located across Kilkenny Road directly to the north and across Byrnes Road directly to the east. 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 mile northwest of the Project site. Draft traffic control plans were developed to identify the appropriate traffic detours to provide emergency access to the Project site and other affected properties along Kilkenny Road during all phases of construction (see Appendix 4.17-I). No additional construction to roadways will occur during construction of the Project. Therefore, the Project will result in less than significant impacts related to emergency access.

4.17.3.7 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kV gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

It is currently anticipated that the PG&E portion of the gen-tie will require a utility crossing of I-80, approximately 900 feet south of the I-80/North Meridian Road interchange, and will therefore require an encroachment permit from Caltrans. PG&E will be responsible for obtaining all necessary permits for this work. This may include temporary roadway closure of I-80 for short durations outside typical peak traffic periods, following Caltrans's protocols for utility crossing of their highway.

4.17.4 Mitigation Measures

No mitigation measures for transportation are proposed because the following Project Design Measure is incorporated into the design of the Project.

PD TRANS-01: A construction traffic management plan (TMP) will be developed and implemented prior to Project construction.

4.17.5 Laws, Ordinances, Regulations, and Standards[11]

4.17.5.1 Federal

U.S. Department of Transportation 49 CFR Parts 172, 173, 179

The U.S. Department of Transportation (USDOT) provides standards for labels, placards, and markings on hazardous waste shipments by truck (49 Code of Federal Regulations [CFR] Part 172) and standards for packaging hazardous wastes (49 CFR Parts 173 and 179).

The Project will use minimal hazardous materials during construction, operation, and decommissioning. During construction, the Project will involve the use of hazardous materials, such as fuels, lubricants, other oils, and greases, to fuel and service construction equipment. These hazardous materials required for construction activities will be stored at the temporary construction staging areas. Hazardous waste and electrical waste will be generated in limited quantities and will be transported to appropriate regulated waste handling facilities for disposal or recycling.

Operation of the Project will use lithium-ion batteries. Batteries will be delivered to the Project site in USDOT-certified vehicles and in compliance with all applicable requirements of the USDOT, California Highway Patrol, and the California Department of Motor Vehicles. Additional information on hazardous materials and their handling is provided in Section 4.9, *Hazards and Hazardous Materials.*

4.17.5.2 State[12]

California Department of Transportation

Caltrans is a state agency overseeing state highway, bridge, and rail transportation planning, construction, maintenance, and operation. Caltrans sets maximum load limits for trucks and safety requirements for oversize/overweight vehicles that operate on highways. Solano County is under the jurisdiction of Caltrans District 4.

Caltrans' *Guide for the Preparation of Traffic Impact Studies* (2002) provides the fundamental criteria and guidelines for conducting such studies. In terms of state highway LOS standards, Caltrans "endeavors to maintain a target LOS at the transition between LOS 'C' and LOS 'D'… on State highway facilities" (Caltrans 2002:1). However, Caltrans recognizes that this may not always be feasible and invites lead agencies to consult with the agency to determine appropriate levels of service for particular state highway facilities. It should also be noted that the intersections of N. Meridian Road and the I-80 eastbound and westbound ramps are under Caltrans jurisdiction.

The following Caltrans regulations apply to potential transportation and traffic impacts of the Project:

- **California Vehicle Code, Division 15, Chapters 1 through 5 (Size, Weight, and Load):** Includes regulations pertaining to licensing, size, weight, and load of vehicles operated on highways.
- **California Street and Highway Code, Sections 660-711, 670-695:** Requires permits from Caltrans for any roadway encroachment during truck transportation and delivery, includes

[11] Appendix B (i) (1) (A)
[12] Appendix B (g) (5) (C) (iv)

regulations for the care and protection of state and county highways and provisions for the issuance of written permits, and requires permits for any load that exceeds Caltrans weight, length, or width standards for public roadways.

In addition to presenting LOS results for the study area roadways and intersections in this traffic assessment, VMT analyses were also performed to be consistent with Senate Bill 743, which is described in more detail below. The VMT analyses were performed in accordance with the Caltrans (2020) *Vehicle Miles Traveled-Focused Transportation Impact Study Guide*.

Senate Bill 743

Senate Bill 743, which was codified in Public Resource Code (PRC) §21099, required changes to the guidelines implementing CEQA (CEQA *Guidelines*) (California Code of Regulations, Title 14, Division 6, Chapter 3 § 15000 et seq.) regarding the analysis of transportation impacts. Pursuant to PRC §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* §15064.3(b), Criteria for Analyzing Transportation Impacts.) To that end, in developing the criteria, the OPR has proposed, and the California Natural Resources Agency has certified and adopted, changes to the CEQA *Guidelines* that identify 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 LOS and other similar metrics, no longer constitutes (in most cases) a significant environmental effect under CEQA (PRC Section 21099(b)(3)).

California Environmental Quality Act Guidelines Section 15064.3, subdivision (b)

CEQA *Guidelines* Section 15064.3(b) describes specific considerations for evaluating a Project's transportation impacts. Generally, 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. Except as provided in subdivision (b)(2) regarding roadway capacity, a Project's effect on automobile delay shall not constitute a significant environmental impact.

California Manual on Uniform Traffic Control Devices 2014 Edition, Revision 8 Part 6

Part 6 of the California Manual on Uniform Traffic Control Devices describes the need and methods of using temporary traffic control (TTC) during construction, utility work, maintenance operations, and traffic incidents. The primary function of TTC is to provide for the reasonably safe and effective movement of road users through or around TTC zones while reasonably protecting road users, workers, responders to traffic incidents, and equipment.

4.17.5.3 Local

Solano County General Plan

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.

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.*

City of Vacaville General Plan

As proposed to be amended, the Transportation of 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 Vehicle Miles Travelled 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 this Transportation Element (Figure TR-6).*

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 5 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 (TCP) 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.

4.17.6 Agencies and Agency Contacts[13]

Table 4.17-16 provides contact information for the agencies responsible for transportation issues.

Table 4.17-16. Agency Contacts for Transportation

Agency	Contact Information	Permit / Issue
Caltrans	District 4 PO Box 23660 111 Grand Avenue, Floor MS 5E Oakland, CA 94623-0660 (510) 286-4401 D4Permits@dot.ca.gov	Encroachment permit for gen-tie crossing of Interstate 80
Solano County Department of Resource Management & Public Works	Solano County Public Works Engineering 675 Texas Street, Suite 5500 Fairfield, Ca. 94533 (707) 784-6077 PWpermits@solanocounty.com	Encroachment permits for ingress-egress and construction within road right-of-way
City of Vacaville Public Works Department	Traffic Engineering Division (707) 449-5170 DevEng_Permits@cityofvacaville.com publicworks@cityofvacaville.com	Encroachment permits for ingress-egress and construction within road right-of-way

4.17.7 Required Permits and Permitting Schedule[14]

Table 4.17-17 provides the permits required that are outside of the authority of the CEC as well as the anticipated permitting schedule.

Table 4.17-17. Permits and Permitting Schedule for Transportation

Permit/Issue	Agency	Schedule
Encroachment Permit - Utilities	Caltrans	Section 671.5 (a) of the California Streets and Highways Code requires that Caltrans either approves or denies an Encroachment Permit Application submittal within 60 calendar days, upon determination that the submittal is complete
Encroachment Permit Application – for two proposed site driveways on Byrnes Road and utility work in right-of-way	Solano County Public Works Engineering	Solano County has indicated they will not issue encroachment permits for the Project
Encroachment Permit Application – for potential temporary closure of portions of Kilkenny Road	Solano County Public Works Engineering	Solano County has indicated they will not issue encroachment permits for the Project

[13] Appendix B (i) (1) (B), Appendix B (i) (2)
[14] Appendix B (i) (3)

Permit/Issue	Agency	Schedule
Traffic Control Plan	Solano County Public Works Engineering	Solano County has indicated they will not issue encroachment permits for the Project
Encroachment Permit for Public Utility Companies – for utility work across Kilkenny Road for gen-tie Option 1 and potential temporary road closure of portions of Kilkenny Road associated with gen-tie Option 2	City of Vacaville Public Works Department	6 weeks for processing and approval, if City will issue encroachment permits for the Project
Encroachment Permit – for construction of a proposed temporary site driveway on the north side of Kilkenny Road serving the gen-tie in laydown yard	City of Vacaville Public Works Department	6 weeks for processing and approval, if City will issue encroachment permits for the Project
Traffic Control Plan -- for proposed construction of one site driveway on Kilkenny Road, utility work in the Right-of-way and temporary road closure of Kilkenny Road	City of Vacaville Traffic Engineering	6 weeks for processing and approval, if City will issue encroachment permits for the Project

4.17.8 References

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4.18 Tribal Cultural Resources

This section identifies and evaluates issues related to Tribal cultural resources in the context of the Corby Battery Energy Storage System Project (Project), in accordance with California Energy Commission (CEC) guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

4.18.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Would the project cause a substantial adverse change in the significance of a Tribal cultural resource, defined in Public Resources Code § 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:			X	
	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 §5020.1(k), or			X	
	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 § 5024.1. In applying the criteria set forth in subdivision (c) of Public Resource Code § 5024.1, the lead agency shall consider the significance of the resource to a California Native American Tribe.			X	

4.18.2 Affected Environment[1, 2]

4.18.2.1 Existing Site Conditions

The Project site and surrounding region are within the ancestral territory of the Patwin (see discussion in Section 4.5.2.2). An ethnographic review of Tribal cultural resources was performed via a Northwest Information Center (NWIC) record search, Native American Heritage Commission (NAHC) sacred lands file (SLF) search, and review of available ethnographic documents (see Section 4.5.3). ICF submitted an online request for a SLF search by the NAHC and the NAHC responded that the results of the SLF search for the Project were negative. The NAHC provided a list of Native American Tribes who may have knowledge of cultural resources in the Project area. In accordance with CEC regulations, the archaeological contractor, ICF, sent coordination letters to 12 contacts from 5 Native American Tribes identified by the NAHC as having interest in the Project site and region (discussed in Section 4.18.3).

[1] Appendix B (g) (1)
[2] Appendix B (g) (2) (A)

In addition, CEC will invite applicable Tribes to consult on the Project, as specified by Public Resources Code (PRC) Section 21080.31, as amended by Assembly Bill (AB) 52 (see Sections 4.18.2 and 4.18.4 below).

4.18.3 Environmental Analysis[3,4]

4.18.3.1 Tribal Outreach and Consultation Status[5]

ICF provided coordination letters to the Tribes identified by the NAHC. The letters provided a description of the Project, a map of the Project site, and a request for information regarding any cultural or Tribal cultural resources within or near the Project site, or if the Tribe had any questions, comments, or concerns regarding the Project (also See Section 4.5.3, correspondence is contained in Confidential Appendix 4.5-A).

ICF sent letters to representatives of the following Tribes:

- Cachil Dehe Band of Wintun Indians of the Colusa Indian Community
- Cortina Rancheria - Kletsel Dehe Band of Wintun Indians
- Guidiville Rancheria of California
- Wilton Rancheria
- Yocha Dehe Wintun Nation

To date, the following Tribes have provided comments:

- Dahlton Brown of the Wilton Rancheria stated he is no longer the Chief Administrative Officer and provided contacts for Chief Operating Officer Chris Franklin, Chief of Staff Samantha Cypret, and Chief Financial Officer Lorenzo Hines (also see Section 4.5.3).
    - ICF sent letters to the named individuals.
- The Yocha Dehe Wintun Nation stated 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.

To date, the Applicant has had one meeting with the Yocha Dehe Wintun Nation. The meeting took place on October 3, 2024, with Tribal representatives Eric Hernandez, Site Protection Manager, and Socorro Reyes-Gutierrez, Site Protection Supervisor. Tribal representatives stated that the Nation’s ancestral area includes Yolo, Solano, Colusa, Napa, and Lake Counties, and requested the following items:

- A copy of the cultural resources report for review,
- A provision to provide cultural training for construction staff, and
- Inclusion of the Yocha Dehe Nation’s Tribal Historic Preservation Officer as a designated contact in the Project’s Unanticipated Discoveries Plan.

[3] Appendix B (g) (1)
[4] Appendix B (g) (1); (g) (2) (A); (g) (2) (B); (g) (2) (C)
[5] Appendix B (g) (2)

4.18.3.2 CEQA Impact Analysis[6]

Impact 4.18-1: Would the project cause 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 geologically defined in terms of the size and scope of the landscape, sacred plan, or object with cultural value to a California Native American tribe 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 5020.1(k), or**
- **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 Resources Code section 5024.1, as the CEQA lead agency, has considered the significance of the resource to a California Native American tribe. (Less than Significant Impact)**

The combined NWIC record search, NAHC SLF search, cultural resources field surveys (see Section 4.5), and initial Tribal coordination by ICF did not identify any Tribal cultural resources listed in a local register or eligible or listed as eligible to the CRHR within or adjacent to the Project site.

Implementation of Project Design (PD) measures **PD CUL 1** (Designated Cultural Resource Specialist), **PD CUL-2** (Cultural Resource Worker Education/Training), **PD CUL-3** (Cultural Resource Monitor and Native American Tribal Cultural Resource Monitor); and **PD CUL-4** (Inadvertent Discovery of Archaeological Resources during Construction), and **PD CUL-5** (Inadvertent Discovery of Human Remains) will ensure that Tribal cultural resources will be appropriately addressed, therefore reducing any significant impacts. Thus, with implementation of these PD measures, the Project will have less than significant impacts.

4.18.3.3 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

Through the implementation of Project Design Measures **PD CUL-1** through **PD CUL-5**, these improvements will not have a substantial adverse effect on any Tribal cultural resources, and no additional mitigation measures will be required.

[6] Appendix B (g) (2), Appendix B (g) (2) (E) (i)

4.18.4 Cumulative Effects[7]

Development of the proposed Project, in combination with other projects in the area, has the potential to contribute to a cumulatively significant cultural resources impact due to the potential loss of historical resources, archaeological resources, and human remains unique to the region. However, as discussed in Section 4.5.5, Project Design Measures **PD CUL-1** through **PD CUL-5** will reduce impacts to Tribal cultural resources to be less than significant, and compliance with existing regulations (California Health and Safety Code, Section 7050.5) will ensure that any impacts to human remains will be less than significant. In addition, Tribal cultural resources that are potentially affected by related or future projects will be subject to the same requirements of the CEQA and the laws and regulations discussed in Section 4.5.2. Therefore, the Project will contribute to a less than significant cumulative impact to Tribal cultural resources.

4.18.5 Mitigation Measures[8]

No mitigation measures for cultural resource impacts are proposed because PD CUL-1 through CUL-5, as described in Section 4.5, *Cultural Resources*, are incorporated into the design of the Project.

4.18.6 Laws, Ordinances, Regulations, and Standards[9]

4.18.6.1 Federal

There are no applicable federal regulations for this issue area.

4.18.6.2 State

A project with an effect that may cause a substantial adverse change in the significance of a Tribal cultural resource may also have a significant effect on the environment (PRC 21084.2). As specified in the PRC Section 21080.31, as amended by AB 52, a lead agency is required to consult with any California Native American Tribe who requests consultation and is traditionally and culturally affiliated with the geographic area of a proposed project. Consultations must include discussing the type of environmental review necessary, the significance of Tribal cultural resources, the significance of the project's impacts on the Tribal cultural resources, and alternatives and mitigation measures recommended by the Tribe (PRC 21080.3.1 (a) and 21084.3, and Government Code 65352.4). That consultation must take place prior to the determination of whether a negative declaration, mitigated negative declaration, or environmental impact report is required for a project.

PRC Section 21074 defines Tribal resources as follows:

> *(a) "Tribal cultural resources" are either of the following:*
>
> *(1) Sites, features, places, cultural landscapes, sacred places, and objects with cultural value to a California Native American tribe that are either of the following:*

[7] Appendix B (g) (1); (g) (2) (E) (ii); (g) (2) (E) (iii)
[8] Appendix B (g) (1); (g) (2) (E)
[9] Appendix B (i) (1) (A)

(A) Included or determined to be eligible for inclusion in the California Register of Historical Resources.

(B) Included in a local register of historical resources as defined in subdivision (k) of Section 5020.1.

(2) 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 Section 5024.1. In applying the criteria set forth in subdivision (c) of Section 5024.1 for the purposes of this paragraph, the lead agency shall consider the significance of the resource to a California Native American tribe.

(b) A cultural landscape that meets the criteria of subdivision (a) is a Tribal cultural resource to the extent that the landscape is geographically defined in terms of the size and scope of the landscape.

(c) A historical resource described in Section 21084.1, a unique archaeological resource as defined in subdivision (g) of Section 21083.2, or a "nonunique archaeological resource" as defined in subdivision (h) of Section 21083.2 may also be a Tribal cultural resource if it conforms with the criteria of subdivision (a).

14 California Code of Regulations 15120(d): Confidentiality About the Location of Archaeological Sites and Sacred Lands

Section 15120(d) of the California Code of Regulations states that information and locational information regarding archaeological sites, sacred lands, or other information is confidential and is restricted from disclosure in public documents.

Also see California Health and Safety Code, Sections 7052 and 7050.5, and California Public Resource Code, Section 5097.

4.18.6.3 Local

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.*

The following implementation program pertains to cultural and Tribal cultural resources:

***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 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*
- *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.*

City of Vacaville General Plan

The Vacaville General Plan addresses cultural resources in the Conservation and Open Space Element (City of Vacaville 2015). The following goals and policies pertain to cultural and Tribal cultural resources under Goal COS-6, Protect and enhance cultural resources for their aesthetic, scientific, educational, and cultural values (COS-22 to COS-23):

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.*

4.18.7 Agencies and Agency Contacts

Table 4.18-1. Agency Contacts for Tribal Cultural Resources[10]

Agency	Contact	Permit/Issue
Native American Heritage Commission	Native American Heritage Commission 1550 Harbor Boulevard, Suite 100 West Sacramento, CA 95691 (916) 373-3710; Fax: (916) 373-5471 nahc@nahc.ca.gov	Native American Tribal and traditional cultural resources or properties; Native American human remains
Cachil Dehe Band of Wintun Indians of the Colusa Indian Community	Cachil Dehe Band of Wintun Indians of the Colusa Indian Community Wayne Mitchum, Jr., Chairman 3730 Highway 45 Colusa, CA, 95932 Phone: (530) 458-6303 jmitchum@colusa-nsn.gov	Tribal Cultural Resources
Cachil Dehe Band of Wintun Indians of the Colusa Indian Community	Cachil Dehe Band of Wintun Indians of the Colusa Indian Community Jennie Mitchum, Cultural Preservation Director 3730 Highway 45 Colusa, CA, 95932 Phone: (530) 458-6512 asmelser@colusa-nsn.gov	Tribal Cultural Resources
Cortina Rancheria - Kletsel Dehe Band of Wintun Indians	Charlie Wright, Chairperson P.O. Box 1630 Williams, CA, 95987 Phone: (530) 473-3274 Fax: (530) 473-3301	Tribal Cultural Resources
Guidiville Rancheria of California	Guidiville Rancheria of California Michael Derry, Historian P. O. Box 339 Talmage, 95481 Phone: (707) 391-1665 historian@guidiville.net	Tribal Cultural Resources
Guidiville Rancheria of California	Guidiville Rancheria of California Bunny Tarin, Tribal Administrator P. O. Box 339 Talmage, 95481 Phone: (707) 463-3682 historian@guidiville.net	Tribal Cultural Resources
Wilton Rancheria	Wilton Rancheria Cultural Preservation Department 9728 Kent Street Elk Grove, 95624 Phone: (916) 683-6000 cpd@wiltonrancheria-nsn.gov	Tribal Cultural Resources

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Agency	Contact	Permit/Issue
Wilton Rancheria	Wilton Rancheria Dahlton Brown 9728 Kent Street Elk Grove, 95624 Phone: (916) 683-6000 dbrown@wiltonrancheria-nsn.gov	Tribal Cultural Resources
Wilton Rancheria	Wilton Rancheria Herbert Griffin, Executive Director of Cultural Preservation 9728 Kent Street Elk Grove, 95624 Phone: (916) 683-6000 hgriffin@wiltonrancheria-nsn.gov	Tribal Cultural Resources
Wilton Rancheria	Wilton Rancheria Chris Franklin, Chief Operating Officer 9728 Kent Street Elk Grove, 95624 Phone: (916) 683-6000 cfranklin@wiltonrancheria-nsn.gov	Tribal Cultural Resources
Wilton Rancheria	Wilton Rancheria Samantha Cypret, Chief of Staff 9728 Kent Street Elk Grove, 95624 Phone: (916) 683-6000 scypret@wiltonrancheria-nsn.gov	Tribal Cultural Resources
Wilton Rancheria	Wilton Rancheria Lorenzo Hines, Chief Financial Officer 9728 Kent Street Elk Grove, 95624 Phone: (916) 683-6000 lhines@wiltonrancheria-nsn.gov	Tribal Cultural Resources
Yocha Dehe Wintun Nation	Yocha Dehe Wintun Nation James Kinter, Tribal Secretary P.O. Box 18 Brooks, CA, 95606 Phone: (530) 908-7564 jkinter@yochadehe.gov	Tribal Cultural Resources
Yocha Dehe Wintun Nation	Yocha Dehe Wintun Nation Anthony Roberts, Chairperson P.O. Box 18 Brooks, CA, 95606 Phone: (530) 976-3400 thpo@yochadehe.gov	Tribal Cultural Resources
Yocha Dehe Wintun Nation	Yocha Dehe Wintun Nation Yvonne Perkins, THPO, Cultural Resources P.O. Box 18 Brooks, CA, 95606 Phone: (530) 976-3400 thpo@yochadehe.gov	Tribal Cultural Resources

Agency	Contact	Permit/Issue
Yocha Dehe Wintun Nation	Yocha Dehe Wintun Nation Leland Kinter, Tribal Treasurer P.O. Box 18 Brooks, CA, 95606 Phone: (530) 908-2902 lkinter@yochadehe.gov	Tribal Cultural Resources

4.18.8 Required Permits and Permitting Schedule[11]

Other than certification by the CEC, no state, federal, or local permits are required for management of Tribal cultural resources.

4.18.9 References

City of Vacaville. 2015. City of Vacaville General Plan. Available online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-documents (accessed August 2024).

Solano County. 2008. Solano County General Plan. Approved November 4, 2008. Available online at: https://www.solanocounty.com/depts/rm/planning/general_plan.asp (accessed August 2024).

[11] Appendix B (i) (1) (B)

4.19 Utilities and Service Systems

This section describes the potential effects on utilities and service systems, including water, wastewater treatment, stormwater drainage, electric power, natural gas, and telecommunications facilities from implementation of the Corby Battery Energy Storage System Project (Project). This section also addresses water supply, wastewater treatment, and solid waste generation.

This section also describes the waste management requirements of the California Energy Commission's (CEC) Opt-In Application, including the potential effects on human health and the environment from hazardous and nonhazardous waste generated from construction and operation of the Project. The risks or hazards posed by the transportation of hazardous materials, including hazardous wastes, are described and analyzed in Section 4.9, *Hazards and Hazardous Materials*. Disposal of hazardous and nonhazardous wastes is discussed in this section.

As socioeconomics is not a required topic pursuant to the California Environmental Quality Act (CEQA), but is required by the CEC as part of the Opt-in Application, this section also addresses applicable socioeconomic CEC requirements as they relate to utilities and service systems for the Project, in accordance with applicable laws, ordinances, regulations, and standards (LORS). Other socioeconomic requirements that are not applicable to utilities and service systems are addressed in Section 4.14, *Population and Housing*, and Section 4.15, *Public Services*, of this application.

4.19.1 California Environmental Quality Act Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
Would the project:					
1.	Require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects?			X	
2.	Have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years?			X	
3.	Result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?			X	
4.	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?			X	
5.	Comply with federal, state, and local management and reduction statutes and regulations related to solid waste?			X	

4.19.2 Affected Environment

This section discusses the condition of the Project site and generation tie (gen-tie) line corridor, in terms of the potential need to remove or otherwise treat contaminated soil or groundwater at the site,

and addresses various nonhazardous and hazardous waste streams for Project construction and operation. In addition to waste generation, this section also discusses the Project's anticipated water supply and the existing wastewater, stormwater, electric power, natural gas, and telecommunications facilities in the Project vicinity.

The Project will be constructed on an approximately 40.3-acre privately owned parcel in Solano County, California. The Project will include a 300-megawatt, 1,200-megawatt-hour battery energy storage system (BESS), associated Project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, stormwater retention basins, storage containers, and a supervisory control and data acquisition system. The Project will connect to the Pacific Gas and Electric (PG&E) Vaca-Dixon Substation via a 1.1-mile-long 230-kilovolt (kV) gen-tie line. Project components are depicted in Figures 2-1 and 2-2 of Section 2, *Project Description*.

4.19.2.1 Project Waste Generation[1,2,3]

Solid nonhazardous waste, as well as limited quantities of liquid and solid hazardous waste, will be generated at the Project site and gen-tie line during facility construction and operation. In California, wastes are classified according to their physical nature (liquid or solid) and their degree of hazardous characteristics. The agencies responsible for classifying and regulating wastes include the California Environmental Protection Agency, the Department of Toxic Substances Control (DTSC), and the California State Water Resources Control Board (SWRCB). Wastes are classified according to regulations set forth in the California Code of Regulations (CCR), Titles 22 and 23. The classifications used by the DTSC reflect the agency's mandate to protect public health and the environment, while the classifications established by the SWRCB are designed to protect the beneficial uses of water.

Nonhazardous waste is a waste that does not contain soluble pollutants in concentrations that would cause degradation of water quality. Nonhazardous wastes may be disposed of at Class III waste disposal facilities. According to the SWRCB, nonhazardous wastes are further divided into solid wastes that contain substantial quantities of degradable material (i.e., common municipal solid waste) and inert wastes, which do not contain degradable materials. Solid waste disposal is also regulated by the California Integrated Waste Management Board and, in the general area of the proposed site for the Project, by the Solano County Department of Resource Management.

Hazardous waste includes any waste whose hazardous nature exceeds criteria for toxicity, corrosivity, ignitability, or reactivity as established by the DTSC. Hazardous waste also involves specific listed wastes as identified in 22 CCR Section 66261. Most hazardous wastes may be disposed of only at Class I waste disposal sites approved by the DTSC. Certain hazardous wastes classified as restricted hazardous wastes are banned entirely from land disposal, because they pose a high threat to public health and the environment. Land disposal restrictions are provided in 22 CCR Section 66268.

Designated wastes are either: 1) a hazardous waste for which the generator has been granted a variance by the DTSC; or 2) a nonhazardous waste that contains pollutants that could be released into

[1] Appendix B (g)(12)(B)
[2] Appendix B (g)(12)(D)
[3] Appendix B (h)(1)(D)(v)

the environment in concentrations that could cause degradation of water quality. Designated waste may be disposed of only at Class I or Class II waste disposal facilities.

The following subsections identify and discuss the specific nonhazardous and hazardous waste streams anticipated to be generated by the Project during construction and operation. Section 4.19.3.1, *Solid Waste Disposal*, discusses Project waste streams in relation to available capacity of nearby disposal facilities for nonhazardous and hazardous wastes.

Construction Phase

During Project construction, most of the solid waste generated during construction will 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 will be separated from the waste stream and recycled whenever feasible. Construction materials will be handled in compliance with the California Green Building Standards Code (CCR, Title 24, 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. These measures will minimize the amount of construction debris generated by the Project that will need to be disposed of in an area landfill. Non-recyclable construction waste will be placed into commercial trash dumpsters located onsite. Dumpsters will be collected as needed by a commercial service and delivered to a landfill approved to accept such materials in accordance with state regulations. Construction will generate an average of approximately 80 cubic yards of construction-related nonhazardous solid waste per week over the 14-month construction period.

Nonhazardous Waste

Listed below are nonhazardous waste streams that will potentially be generated from construction of the Project.

Paper, Wood, Glass, and Plastics—Paper, wood, glass, and plastics will be generated from packing materials, waste lumber, insulation, and empty nonhazardous chemical containers during Project construction. These wastes will be recycled where practical. Waste that cannot be recycled will be disposed of weekly in a Class III landfill. Onsite, the waste will be placed in dumpsters.

Concrete—Excess concrete will be generated during construction of the facility. Waste concrete will be disposed of weekly in a Class III landfill or at clean fill sites, if available, or will be recycled and disposed of at a construction and demolition site.

Metal—Metal, including steel from welding/cutting operations, packing materials, and empty nonhazardous chemical containers, and aluminum waste from packing materials and electrical wiring will be generated during construction. Waste will be salvaged/recycled where practical, and nonrecyclable waste will be deposited in a Class III landfill.

Organic Materials—In addition to typical construction-related solid waste, organic waste will be generated during Project construction from the removal of orchard trees located along the gen-tie corridor and within the gen-tie laydown area. Organic waste generated from orchard removal will be disposed of at an organic waste or composting facility.

Hazardous Waste

Construction of the Project will 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 will be stored at the temporary construction staging areas. Hazardous waste and electrical waste will be generated in limited quantities and will be handled, transported, and disposed of in accordance with applicable LORS. Hazardous wastes will be either recycled or disposed of in a licensed hazardous waste treatment or disposal facility.

The Applicant will be considered the generator of waste oil and miscellaneous hazardous waste produced during Project construction and will be ultimately responsible for compliance with applicable state and federal regulations regarding hazardous waste, including licensing, personnel training, accumulation limits, reporting requirements, and record keeping. Hazardous waste will be collected in hazardous waste accumulation containers near the point of generation. The accumulation containers, once full, will be hauled to the construction contractor's 90-day hazardous waste storage area and will be disposed of by a licensed hazardous waste disposal service.

Operational Phase

During operation, the Project will not generate solid, liquid, or hazardous wastes on a regular basis. Insignificant quantities of nonhazardous solid waste will be infrequently generated by regular operations and maintenance activities and will be disposed of with standard refuse collection at a regional operations and maintenance facility.

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

Nonhazardous Waste

Nonhazardous solid wastes generated during operation of the Project will include routine maintenance solid waste. Solid wastes will be recycled to the extent practical or removed on a regular basis by a permitted waste hauler for disposal at a Class III landfill. Since the facility will be unstaffed and operated remotely, quantities of solid waste generation from routine maintenance and operation will be insignificant. The minimal solid waste disposal from the Project will be an insignificant increase relative to current annual total combined disposal quantities at the landfills discussed in Section 4.19.3.1, *Solid Waste Disposal*, below.

Hazardous Waste

Hazardous wastes are not expected to be generated on a regular basis during operations. Limited quantities of lubricants, oils, coatings, or other miscellaneous hazardous materials may require infrequent disposal as hazardous wastes. The Applicant will be considered the generator of miscellaneous hazardous waste produced during Project operations and will be ultimately responsible for compliance with applicable state and federal regulations regarding hazardous waste, including licensing, personnel training, accumulation limits, reporting requirements, and record keeping. Hazardous waste will be collected in a 90-day hazardous waste storage area at a regional

operations and maintenance facility and will be disposed of by a licensed hazardous waste disposal service.

During Project operation, the facility will require battery augmentation to maintain Project capacity; batteries will be added but not replaced during this planned activity. However, lithium-ion battery cells may occasionally be replaced due to defects or loss of efficiencies. Most lithium-ion batteries on the market are likely to meet the definition of hazardous waste by the U.S. Environmental Protection Agency (USEPA) under the Resource Conservation and Recovery Act (RCRA). When discarded, most lithium-ion batteries would likely be considered ignitable and reactive hazardous wastes. Lithium-ion batteries with different chemical compositions can appear nearly identical yet have different properties. In addition, some discarded lithium-ion batteries are more likely to have hazardous properties if they contain a significant charge, yet such batteries can appear to the user to be completely discharged. Therefore, the USEPA recommends that businesses consider managing lithium-ion batteries under the federal "universal waste" regulations in Title 40 of the Code of Federal Regulations Part 273 (USEPA 2024a).

The USEPA acknowledges that lithium-ion batteries are generally safe when used, stored, and charged appropriately. However, the USEPA is currently working on establishing a category of universal waste specifically for lithium batteries to improve safety standards and reduce fires from mismanaged end-of-life lithium batteries (USEPA 2024b). Ultimately, there are many options to properly manage the disposal of used lithium-ion batteries, including reclamation by battery manufacturers, and batteries will not be disposed of in municipal landfills.

4.19.2.2 Wastewater and Stormwater

Wastewater service is not currently provided at the Project site. Rural areas of Solano County generally use onsite septic systems for wastewater disposal. Existing stormwater drainage at the Project site consists of natural overland flow, infiltration into onsite soils, and roadside ditches. The Project design includes stormwater facilities that will assist with runoff capture. Below is a discussion of anticipated wastewater and stormwater runoff generated by the Project during construction and operation.

Construction Phase

Wastewater generated during Project construction will include sanitary waste, stormwater runoff, equipment washdown water, and water from excavation dewatering during construction (if dewatering is required). Nominal sanitary wastewater will be generated during construction. Portable restroom facilities will be provided and maintained for workers during construction and will be removed upon completion of construction. Construction-related sanitary wastes, collected in portable self-contained chemical toilets, will be pumped periodically and transported by a licensed hauler to a sanitary wastewater treatment facility.

Implementation of stormwater and erosion control best management practices (BMPs) and adherence to General Construction National Pollutant Discharge Elimination System (NPDES) permit requirements will minimize potential impacts of construction activities. Additionally, the Project design incorporates operational site drainage controls (see below) that will function in coordination with construction BMPs during the construction phase following site grading.

Operational Phase

Wastewater services will not be required for Project operations. The Project will not have an operations and maintenance facility, will be operated remotely, and will not have permanent sanitary facilities. Temporary sanitary facilities will be provided to support onsite maintenance activities when required. Thus, no wastewater will be generated during Project operation.

The Project design incorporates onsite stormwater facilities, including a perimeter ditch and two retention basins, to manage post-construction stormwater runoff from the Project site and areas draining toward the site. The perimeter drainage ditch will be installed along the northern, western, and southern edges of the BESS area to collect runoff both from the undisturbed outer portions of the existing watersheds and runoff from the BESS and Project substation areas, then convey this runoff to the retention basins. One stormwater basin will be placed in the northeastern quadrant of the Project and the other in the southeastern corner. The drainage system has been designed to ensure that peak discharges from the Project site from a 100-year 24-hour storm event will not exceed the peak discharges under current conditions (see Appendix 4.10-A for the Hydrology and Hydraulics Report; and Appendix 2-B for the Grading Plan).

Refer to Section 4.10, *Hydrology and Water Quality,* for additional site drainage information.

4.19.2.3 Water Supply

Existing water supply infrastructure at the Project site includes a Solano Irrigation District (SID) canal that runs between the northern boundary of the Project site and Kilkenny Road. There are no existing wells or other sources of water supply that serve the Project site. As discussed in Section 2.0, *Project Description,* and Section 4.10, *Hydrology and Water Quality*, water for Project construction will be sourced from either SID or a new onsite groundwater well. The Applicant has coordinated with SID to secure water supply for construction and has been informed that SID cannot commit to providing construction water in advance of the construction year because approvals are based on annual water budget allocations and seasonal operating constraints (see Appendix 2-C). Therefore, the Applicant is proposing development of a groundwater well onsite if SID water is not available to support construction needs. Additional discussion is provided below in Section 4.19.3.2, under Impact 4.19-2.

4.19.2.4 Electric Power and Natural Gas

PG&E is an investor-owned utility company that provides electricity and natural gas supplies and services to approximately 16 million people throughout a 70,000-square-mile service area that includes Solano County and the Project site (PG&E 2024).

The Project will be located approximately 0.65 mile southeast of the PG&E Vaca-Dixon Substation. Utility-related facilities are also located near the Project site, including existing 500-kV transmission lines located approximately 0.5 mile to the west of the Project site.

An existing natural gas transmission line crosses the southwest corner of the Project parcel (NPMS 2024). Other natural gas connections exist at nearby residences.

4.19.2.5 Telecommunications

The Project site is not currently served by any existing telecommunications facilities. However, some telecommunications connections exist in the Project vicinity to serve nearby residences.

4.19.2.6 Site Reconnaissance[4]

A Phase I Environmental Site Assessment was conducted by NextEra Environmental Services for the Project site, which is incorporated into this application by reference and included as Appendix 4.9-A using the scope and limitations of ASTM E1527-21, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process*. A discussion of the existing site conditions and report findings are provided in Section 4.9, *Hazards and Hazardous Materials*, of this application.

4.19.3 Environmental Analysis

4.19.3.1 Solid Waste Disposal[5,6]

Nonhazardous solid waste will be recycled or disposed of in a local sanitary landfill. Hazardous wastes, both solid and liquid, will be delivered to a permitted offsite treatment, storage, and disposal facility for treatment or recycling, or will be transported to a permitted Class I landfill.

Nonhazardous Waste

Solano County is primarily served by the Recology Hay Road Landfill in the City of Vacaville and the Potrero Hills Landfill located in Suisun City. The Recology Hay Road Landfill has a permitted capacity of 2,400 tons of solid waste per day and a total design capacity of 37,000,000 cubic yards with an estimated "cease of operation date" of January 1, 2077 (CalRecycle 2024a). The Potrero Hills Landfill has a permitted capacity of 4,330 tons of solid waste per day and a total design capacity of 81,100,000 cubic yards with an estimated "cease of operation date" of February 14, 2048 (CalRecycle 2024b).

As discussed previously in Section 4.19.2.1, approximately 80 cubic yards of solid nonhazardous waste will be generated per week during construction of the Project, and minimal solid waste will be generated throughout the life of the Project during operation. Solid waste streams will be recycled to the extent possible, and what cannot be recycled will be disposed of at a permitted landfill.

The Project will generate nominal quantities of construction debris from site preparation activities and during installation of the battery energy systems and associated infrastructure. Refuse generated during Project construction will be disposed of at either the Recology Hay Road Landfill or the Potrero Hills Landfill , both of which service Solano County.

Solid waste generated during the construction phase will be properly disposed of in accordance with applicable statutes and regulations. With an estimated 80 cubic yards per week of solid nonhazardous waste generated during construction, and considering that the Recology Hay Road Landfill and the Potrero Hills Landfill are anticipated to cease operations in 2077 and 2048, respectively, the Project

[4] Appendix B (g)(12)(A)
[5] Appendix B (g)(12)(C)
[6] Appendix B (g)(7)(A)(vi)

will likely represent a small fraction of the County's total waste generation and there would be ample nonhazardous landfill capacity to support the Project.

The Project will also generate organic waste during construction from removal of the existing orchard trees located along the gen-tie corridor and within the gen-tie laydown area. The Project will generate approximately 650 tons of organic waste from orchard removal. A portion of this biomass will likely be chipped and spread onsite; however, 100 percent offsite disposal has been assumed for the purposes of the environmental impact analyses throughout this application. There are two organic waste composting facilities in Solano County that could receive the organic waste generated by the Project, including the Jepson Prairie Organics Composting Facility in the City of Vacaville and the Potrero Hills Composting Facility in Suisun City. The Jepson Prairie Organics Composting Facility has a maximum permitted capacity of 172,600 cubic yards and can receive 750 tons per day of green materials and agricultural waste. The Jepson Prairie Organic Composting Facility has a maximum permitted capacity of 216,300 cubic yards per year and can receive 320 tons per day of green materials and wood waste. With an estimated 650 tons of organic waste generated from orchard removal during construction, there will be sufficient capacity at these organic waste composting facilities to support the Project.

As the Project is an energy storage facility and will not have employees regularly onsite, operation of the Project will generate a small amount of solid waste, which will be a negligible increase in solid waste generation onsite. Therefore, the Project's solid waste production during operation will not exceed state or local standards or the capacity of the receiving landfills.

The Project will comply with all applicable federal, state, and local statutes and regulations related to solid waste. Additionally, the nonhazardous waste quantities from the Project will be nominal and not adversely impact available landfill capacity. Therefore, impacts related to nonhazardous solid waste disposal will be less than significant.

Hazardous Waste

The Project will generate a minimal amount of hazardous waste. Construction of the Project will involve the use of hazardous materials, such as fuel, lubricants, other oils, and greases, to fuel and service construction equipment; hazardous waste generation will be limited and managed by the construction contractor in accordance with applicable regulatory requirements. Hazardous waste generated during operation will be nominal and will either be stored offsite at a regional operations and maintenance facility or stored onsite in accordance with the manufacturers' specifications and consistent with applicable regulatory requirements, including dedicated storage areas including secondary containment to prevent accidental release. Workers will be trained to engage in safe work practices and to properly identify and handle any hazardous materials onsite.

Hazardous waste will be transferred to a hazardous waste treatment, storage, and disposal facility by a permitted hazardous waste transporter. These facilities vary considerably in what they can do with the hazardous waste they receive. Some can only store waste, while some can treat the waste to recover usable products, and others can dispose of the waste.

According to the DTSC, there are two active hazardous waste landfills in California. There are also numerous offsite commercial liquid hazardous waste treatment and recycling facilities in California, in

addition to the hazardous waste landfills described below (DTSC 2024a). One such facility is Advanced Environmental Inc., DBA World Oil Environmental Services, which stores and treats hazardous waste in tanks and containers including used oil, oily waste, oily waters, used antifreeze, used aqueous part washer solution from offsite generators associated with the auto repair and service industry (gas stations, oil change, auto repair shops, etc.) (DTSC 2024b). Advanced Environmental Inc., DBA World Oil Environmental Services is located in the city of Dixon, approximately 1.7 miles northeast of the Project site.

Chemical Waste Management, Inc., Kettleman Hills Facility (CWM) is a commercial hazardous waste treatment, storage, and disposal landfill with a Hazardous Waste Facility Permit (HWFP). CWM is one of two operating hazardous waste disposal facilities in California. CWM is in Kings County, located approximately 3.5 miles southwest of Kettleman City and approximately 195 miles southeast of the Project site (DTSC 2024c). Hazardous waste is transported to the facility by truck via Interstate 5 and State Route 41. The CWM entrance is located on State Route 41, located approximately 2.6 miles west of Interstate 5.

The CWM facility has a permitted capacity of 2,000 tons of solid waste per day and a total design capacity of 18,400,000 cubic yards with an estimated "cease of operation date" of January 1, 2030 (CalRecycle 2024c).

The Clean Harbors Buttonwillow Facility is a commercial hazardous waste management and disposal landfill located at 2500 West Lokern Road, approximately 8 miles west of Buttonwillow, 36 miles west of Bakersfield, and 243 miles southeast of the Project site. Hazardous waste management and disposal activities are regulated under conditions of a RCRA HWFP. The Clean Harbors Buttonwillow Facility accepts solid, semi-solid, and liquid hazardous and nonhazardous wastes for treatment, storage, or disposal (DTSC 2024d).

The Clean Harbors Buttonwillow Facility has a permitted capacity of 10,500 tons of solid waste per day and a total design capacity of 13,250,000 cubic yards with an estimated "cease of operation date" of January 1, 2040 (CalRecycle 2024d).

As the Project will generate a minimal amount of hazardous waste during construction and operation; disposal capacity in California will be more than adequate to support the Project. The Project will be constructed and operated in compliance with applicable federal, state, and local statutes and regulations related to hazardous waste. Therefore, impacts related to hazardous solid waste disposal will be less than significant.

Battery Disposal

As discussed previously in Section 4.19.2.1, *Operational Phase* under *Nonhazardous Waste*, used lithium-ion batteries are most likely considered hazardous waste by the USEPA. As lithium-ion batteries with different chemical compositions can appear nearly identical yet have different properties, the USEPA recommends that businesses consider managing lithium-ion batteries under the federal "universal waste" regulations found in Title 40 of the Code of Federal Regulations Part 273, which address the responsible disposal and recycling of these batteries. Some lithium-ion batteries may be considered hazardous waste under RCRA if they exhibit a characteristic of hazardous waste such as ignitability, reactivity, or toxicity when they are disposed. Commercial establishments are

responsible for determining whether any waste they produce is hazardous waste, including lithium-ion batteries at their end of life (USEPA 2024a).

The universal waste regulations provide a streamlined set of requirements for generators of specific types of common hazardous wastes (e.g., fluorescent lamps containing mercury, batteries) from a wide variety of commercial settings. Requirements differ depending on whether waste generators accumulate less or more than 5,000 kilograms of total universal wastes onsite at one time, but they include instructions on how to manage the waste, how to label containers, how long the waste can be accumulated onsite, and where the waste can be sent, among others. Universal waste regulations do not require shipment using a hazardous waste manifest but do require that the waste be sent to a permitted hazardous waste disposal facility or a recycler (USEPA 2024a).

As lithium-ion battery cell capacity degrades over time during Project operation, additional batteries will be installed to maintain Project capacity. Routine battery cell change-out or disposal is not anticipated. Battery cell replacement during operations would only occur due to unanticipated defects or performance issues. The battery modules included in the BESS will be recycled or disposed of in compliance with the federal and California nonhazardous and 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 to re-use in new battery cells, the recycled materials extracted can be used in a wide variety of consumer products such as lithium grease, concrete additives, and some glass products. Ultimately, many options exist to manage used lithium-ion batteries, and batteries will not be disposed of in a municipal landfill. Impacts related to battery disposal will be less than significant.

4.19.3.2 CEQA Impact Analysis[7]

IMPACT 4.19-1: Would the project require or result in the relocation or construction of new or expanded water, wastewater treatment or storm water drainage, electric power, natural gas, or telecommunications facilities, the construction or relocation of which could cause significant environmental effects? (Less than Significant Impact)

Water Supply

During Project construction, it is anticipated that up to 30 acre-feet (AF) of water (9,776,000 gallons) will be used for construction of the Project. The Project will also include temporary irrigation to support establishment of the proposed drought-tolerant perimeter landscaping. Approximately 2.0 AF (664,000 gallons) will be required during the first year following installation. Required irrigation volumes are expected to be scaled back by 20 to 30 percent each year to allow for complete shutoff of irrigation by year 3 through 5. Aside from the temporary landscaping irrigation, no water will be required for Project operations. Water for construction of the Project will be obtained from either SID or from a new onsite groundwater well. SID is the local water purveyor and may provide water either via their irrigation canal abutting the northern boundary of the Project site or via their pressurized system depending on the time of year, availability, and feasibility of pumping directly from the canal. The Applicant submitted a request for construction water through the SID's defined process. Based on

[7] Appendix B (g)(7)(B)(v)

the response received (see Appendix 2-C), SID is not able to process requests for future years and does not provide will-serve letters. Water budgets are approved on an annual basis and all construction water contracts terminate at the end of each calendar year. In the event SID is unable to meet Project water supply needs; the Applicant will develop an onsite groundwater well to serve construction and temporary landscape irrigation needs. Impacts related to the construction of a new onsite groundwater well have been analyzed throughout this application. As determined in Section 4.10, *Hydrology and Water Quality*, there are sufficient groundwater resources to serve the Project, and construction of a new onsite groundwater well will not cause a significant environmental effect. If water is secured from SID, the Project will not require the relocation or construction of new water facilities. However, if the Project is unable to secure water from SID, construction of new water facilities (an onsite groundwater well) will be required. Regardless, the Project will not result in significant environmental impacts related to the relocation or construction of new water facilities.

Wastewater

The Project site does not contain existing wastewater facilities or connections to wastewater conveyance systems, such that the Project will not require the relocation of existing wastewater facilities. Wastewater generated during Project construction will include sanitary waste, stormwater runoff, equipment washdown water, and water from excavation dewatering during construction (if dewatering is required). Onsite stormwater facilities are incorporated within the Project design, which is discussed further in the *Stormwater* subsection below. Nominal sanitary wastewater will be generated during construction. Portable restroom facilities will be provided for workers during construction and will be removed upon completion of construction. Sanitary waste collected in portable self-contained chemical toilets will be pumped periodically and transported by licensed hauler to a sanitary wastewater treatment facility. Project operation will not result in wastewater generation as there will be no regular onsite employees. Therefore, the proposed Project will not require the relocation or construction of new wastewater facilities that would result in significant environmental impacts.

Stormwater

No stormwater drainage facilities currently exist on the Project site. Existing stormwater drainage at the Project site consists of natural overland flow and infiltration into onsite soils. Thus, the Project will not result in the relocation of any stormwater drainage facilities.

During Project construction, a Project-specific Stormwater Pollution Prevention Plan will be prepared to manage stormwater runoff by implementing BMPs in accordance with state and local regulatory requirements and the stormwater NPDES construction permit requirements. Onsite stormwater will be sufficiently managed through NPDES construction permit requirements such that the Project will not result in the need for construction of offsite stormwater facilities.

As described above in Section 4.19.2.2, *Wastewater and Stormwater*, the Project design incorporates onsite stormwater facilities, including a perimeter ditch and two retention basins, to manage post-construction stormwater runoff from the Project site and areas draining toward the site. As these are components of the Project, the environmental effects of the proposed onsite stormwater drainage facilities have been analyzed in this application. The Project will not secondarily result in the need for

additional new stormwater drainage facilities outside of those included in the Project design, as the Project will sufficiently manage stormwater flows from the Project site toward the existing natural drainage areas. Impacts from the construction of the stormwater facilities will be less than significant.

Electric Power

As a BESS facility, the Project will be a new component of the local electric power utility and service system, and the Project will connect to the PG&E Vaca-Dixon Substation, located approximately 0.65-mile northwest of the Project site, using a 230-kV gen-tie line. The gen-tie line will include both overhead and underground segments as described in Section 3.0, *Electrical Transmission*. The Project includes multiple modular, prefabricated battery enclosures in a parallel configuration. Inverters will also be installed adjacent to the battery enclosures to convert between alternating current, which is used by the transmission grid, and direct current, which is used to charge and discharge the batteries. Underground or aboveground collector lines will transmit energy between the onsite Project substation and the inverters within the BESS yards. The proposed substation will accommodate the grid intertie safety equipment and switches required to interconnect to the high-voltage transmission system. The Project substation will include switchgear and additional electrical equipment as required by PG&E specifications.

As discussed above, the energy will be transported from the onsite switchyard to the adjacent PG&E Vaca-Dixon Substation through a gen-tie transmission line. The Vaca-Dixon Substation will provide the necessary circuit breakers, switches, protection relays, and other equipment to reliably and safely protect both the Project's and PG&E's electrical infrastructure.

The proposed Project will not require the expansion of the existing PG&E Vaca-Dixon Substation (only network upgrades within the current substation footprint) or relocation of existing utility lines. Refer to Section 4.19.3.3 below for additional information and analysis on PG&E's scope of work. As discussed above, the gen-tie line will include both overhead and underground segments.

Electric facilities and connections proposed as part of the Project could result in potential environmental impacts. However, as these are components of the Project, the environmental effects of the proposed electric facilities and connections have been analyzed in this application. The Project will not require or result in the construction or relocation of new or expanded electric facilities beyond those included as part of the Project that will cause an adverse environmental effect.

Natural Gas

No natural gas utility connections are proposed or will be impacted by the proposed Project. A natural gas transmission line runs through the southwest corner of the Project parcel; however, it will not be impacted by the Project. As a BESS facility, the Project does not require the use of natural gas for power generation. No natural gas facilities are proposed as part of the Project; therefore, the Project will not result in the relocation or construction of new or expanded natural gas facilities that would cause an adverse environmental effect.

Telecommunications Facilities

The Project will include the construction of new telecommunications facilities, which will be collocated with the proposed gen-tie line. The Project will not result in significant environmental impacts from the construction of new telecommunications facilities collocated with the gen-tie line.

The Project will not require the relocation or expansion of existing utilities in the Project area. The Project will include the installation of a gen-tie transmission line. Acquisition of the appropriate permits, and compliance with all applicable regulations and requirements of those permits, will reduce any potential impacts from the construction of new utilities to a less than significant level.

IMPACT 4.19-2: Would the project have sufficient water supplies available to serve the project and reasonably foreseeable future development during normal, dry and multiple dry years? (Less than Significant Impact)[8]

As discussed under Impact 4.19-1 in Section 4.19.3.3, *CEQA Impact Analysis,* the BESS facility will require a minimal amount of water during Project construction and no water will be required during Project operation. Water will be used for common construction-related purposes, including dust suppression, soil compaction, and grading. The overall construction water usage is anticipated to be up to 30 AF. Additionally, temporary irrigation will be required to support establishment of the proposed drought-tolerant perimeter landscaping. Approximately 2.0 AF (664,000 gallons) will be required during the first year following installation. Required irrigation volumes are expected to be scaled back by 20 to 30 percent each year to allow for complete shutoff of irrigation by years 3 through 5. No operational water will be required once the proposed landscaping has established.

Water for Project construction and temporary landscape irrigation will be obtained from either SID or from a new onsite groundwater well. SID may provide water either via their irrigation canal abutting the northern boundary of the Project site or via their pressurized system depending on the time of year, availability, and feasibility of pumping directly from the canal. The Applicant submitted a request for construction water through the SID's defined process. Based on the response received (see Appendix 2-C), SID is not able to process requests for future years and does not provide will-serve letters. Water budgets are approved on an annual basis and all construction water contracts terminate at the end of each calendar year. In the event SID is unable to meet Project water supply needs; the Applicant will develop an onsite groundwater well to serve construction and temporary landscape irrigation needs. If groundwater is used for water supply, the required 30 AF for construction would represent less than 0.02 percent of the annual average groundwater extraction within the Solano Subbasin, which has also been stable to increasing based on the observed groundwater levels and model simulated water budget results. Additionally, the Solano Subbasin is not expected to decline in the future and no groundwater supply shortage is anticipated anytime during the next 50 years (Appendix 4.10-B). Additional information regarding SID and groundwater availability is provided in Section 4.10, *Hydrology and Water Quality*. Due to the low amount of water used during the construction of the Project, in addition to no water use during Project operations, it is

[8] Appendix B (g)(7)(A)(vi)

anticipated that the Project will have sufficient water supplies during normal, dry, and multiple dry years. Impacts will be less than significant.

IMPACT 4.19-3: Would the project result in a determination by the wastewater treatment provider, which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments? (Less than Significant Impact)

Wastewater disposal needs during construction will be provided onsite via portable toilet facilities, with sanitary disposal occurring at an offsite facility. During operation, the Project will be operated remotely and will not have permanent sanitary facilities onsite; thus, it will not require wastewater treatment services. Portable toilet facilities will be brought in to support periodic onsite maintenance activities. Public wastewater treatment services will not be required for the Project, and no increase in demand for wastewater treatment services will occur with implementation of the Project. The Project will not result in a determination by the wastewater treatment provider that said provider has inadequate capacity to serve the Project's demand in addition to the provider's existing commitments. Therefore, the proposed Project will have a less than significant impact on the projected demand and service of local wastewater treatment providers.

IMPACT 4.19-4: 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? (Less than Significant Impact)

As discussed previously in Section 4.19.3.1, *Solid Waste Disposal*, the Project will not result in the generation of 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 will generate an average of approximately 80 cubic yards of nonhazardous solid waste per week over the 14-month construction period. Construction will also generate approximately 650 tons of organic waste from orchard removal. Operation of the Project will produce an insignificant amount of nonhazardous solid waste during routine maintenance activities. There is sufficient capacity at both Recology Hay Road Landfill in the City of Vacaville and the Potrero Hills Landfill to accommodate nonhazardous wastes generated by the Project. There is also sufficient capacity at both the Jepson Prairie Organics Composting Facility and the Potrero Hills Composting Facility to accommodate organic wastes generated by the Project from orchard removal. All hazardous and electrical waste will be generated in limited quantities and handled, transported, and disposed of in accordance with applicable regulations. Additionally, many options exist to properly dispose of used lithium-ion batteries, including reclamation by battery manufacturers, and batteries will not be disposed of in a municipal landfill. Accordingly, the Project will be implemented in compliance with applicable federal, state, and local statutes and regulations related to solid waste. The Project will not 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; therefore, impacts will be less than significant.

IMPACT 4.19-5: Would the project comply with federal, state, and local management and reduction statutes and regulations related to solid waste? (Less than Significant Impact)

Solid waste disposal is discussed in Section 4.19.3.1, *Solid Waste Disposal*, above, including the disposal of both nonhazardous and hazardous wastes. The Project will be required to comply with federal, state, and local management and reduction statutes and regulations related to both nonhazardous and hazardous solid waste. Construction materials will be organized during construction, and recyclable materials will be separated from nonrecyclable items to be transported to a designated recycling facility. Wooden construction waste (such as wood from wood pallets) would be sold or recycled. All contractors and workers will be educated about waste sorting, appropriate recycling storage areas, and how to reduce landfill waste. Organic waste generated from orchard removal will also be disposed of at an organics composting facility. Project operation will generate a negligible amount of solid waste, as there will be no permanent operations and maintenance staff required during operations. Batteries will also be recycled or disposed of in accordance with federal, state, and local regulations. Therefore, the Project will not negatively impact the provision of solid waste services or the attainment of solid waste reduction goals,.

4.19.3.3 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kV gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

As a result of PG&E construction of the gen-tie line from the POCO to the Vaca-Dixon Substation and associated interconnection facilities, it is anticipated that there will be minimal impacts related to utilities and service systems and waste management. Construction impacts will be similar to those of the battery energy storage facility and Applicant portion of the gen-tie line and will be regulated by the same federal, state, and local requirements. Operation impacts will also be similar to those of the battery energy storage facility and Applicant portion of the gen-tie line, which will be less than significant. Solid waste generation (both nonhazardous and hazardous) will be less than the battery energy storage facility and will be handled and disposed of in accordance with all applicable solid waste handling regulations previously described. Construction of the PG&E facilities may require a negligible amount of water for typical construction activities, such as for dust suppression and soil compaction, similar to the battery energy storage facility and Applicant portion of the gen-tie line. No water will be required during operation. The PG&E facilities will also result in no significant impacts related to wastewater, stormwater drainage, natural gas, or telecommunications facilities. The PG&E facilities will be considered construction of a new electric power facility; however, as this is a component of the Project, the environmental effects of the proposed electric facilities and connections have been analyzed in this application. Therefore, PG&E construction of the gen-tie line from the POCO to the Vaca-Dixon Substation and associated interconnection facilities will have no

significant impacts with regard to CEQA Significance Criteria for Utilities and Service Systems (Impacts 4.19-1 through 4.19-5 above). No mitigation measures will be required.

4.19.4 Cumulative Effects

Construction and operation of the Project, in combination with the incremental impacts of other projects, will not cause or contribute to any significant cumulative impacts relating to utility services.

Cumulative projects are included in Table 4.11-4 of Section 4.11, *Land Use and Planning*.

As discussed in Section 4.19.3, *Environmental Analysis*, the Project will not result in significant adverse impacts related to the generation of solid waste. Cumulative impacts related to the generation of solid waste could occur if multiple projects would surpass landfill capacity. However, the amount of nonhazardous, hazardous, and organic wastes generated during Project construction and operation will be relatively low and recycling will be prioritized, when possible, as discussed in Section 4.19.2.1, *Project Waste Generation*. Although some cumulative projects listed in Table 4.11-4 may be constructed concurrently with the proposed Project, significant capacity exists at the existing treatment and disposal facilities previously discussed, including both nonhazardous and hazardous waste landfills and organic waste composting facilities. Therefore, the Project will not cause or contribute to any significant cumulative impact related to solid waste generation.

Additionally, the Project will not result in significant adverse impacts related to the relocation or construction of new or expanded water, wastewater treatment, natural gas, or telecommunications facilities. As no significant impacts from the Project would occur, no cumulative impacts would occur either.

Furthermore , as discussed under Impact 4.19-3 in Section 4.19.3.2, *CEQA Impact Analysis,* public wastewater treatment services will not be required for the Project, and no increase in demand for wastewater treatment services will occur with implementation of the Project. As such, the Project will not result in significant impacts to wastewater service providers; and therefore, no cumulative impacts will occur.

The Project will result in the construction of new stormwater drainage and electrical power facilities. However, as these are components of the Project, the environmental effects of the proposed onsite stormwater drainage facilities and electrical power generation facilities have been analyzed in this application.

Finally, the Project was determined to result in less than significant impacts related to water supply. As discussed under Impact 4.19-2 in Section 4.19.3.2, *CEQA Impact Analysis,* the Project's anticipated water usage will be a very small percentage of both the overall surface water supply of the SID and the overall typical groundwater basin pumping within the Solano Subbasin. The Applicant has coordinated with SID to secure water supply for construction and has been informed that SID cannot commit to providing construction water in advance of the construction year because approvals are based on annual water budget allocations and seasonal operating constraints (see Appendix 2-C). Therefore, the Applicant is proposing development of a groundwater well onsite if SID water is not available to support construction needs. If groundwater is used for water supply, the required 30 AF for construction would represent less than 0.02 percent of the annual average groundwater extraction

within the Solano Subbasin, which has also been stable to increasing based on the observed groundwater levels and model simulated water budget results (Appendix 4.10-B). Cumulative impacts will occur if multiple projects will simultaneously result in the need for water beyond the capabilities of water providers or the groundwater basin. However, the Project will only require water for a relatively short period of time, during construction and temporary irrigation, and will not require water during operation. Additionally, the Solano Subbasin is not expected to decline in the future and no groundwater supply shortage is anticipated anytime during the next 50 years (Appendix 4.10-B). Ultimately, the Project's water use would be temporary and relatively low, and all cumulative projects will be required to obtain a determination that sufficient water supply is available. Therefore, the Project will not result in a cumulatively considerable impact related to water supply.

4.19.5 Mitigation Measures

No significant impacts are anticipated, and no mitigation measures are necessary.

4.19.6 Laws, Ordinances, Regulations, and Standards[9]

Nonhazardous and hazardous waste handling by the Project will be governed by federal, state, and local laws. Applicable laws and regulations address proper waste handling, storage, and disposal practices to protect the environment from contamination and to protect facility workers and the surrounding community from exposure to nonhazardous and hazardous waste. Table 4.19-1 presents a summary of the LORS applicable to utilities and service systems at the Project site.

Table 4.19-1. Laws, Ordinances, Regulations, and Standards for Utilities and Service Systems

LORS	Requirements/Applicability	Administering Agency	Project Conformance
Federal			
RCRA Subtitle D	Regulates design and operation of solid waste landfills.	California Integrated Waste Management Board	Project solid waste will be collected and disposed of by a collection company in conformance with Subtitle D.
RCRA Subtitle C	Controls storage, treatment, and disposal of hazardous waste.	DTSC	Hazardous waste will be handled by contractors in conformance with Subtitle C.
Clean Water Act	Controls discharge of wastewater to the surface waters of the United States.	Regional Water Quality Control Board	Construction-related sanitary wastes would be occasionally pumped and transported offsite. Temporary irrigation will be required to support the initial establishment of proposed landscaping. Stormwater runoff will be managed by implementing BMPs in accordance with state and local regulatory requirements and the storm NPDES construction permit requirements. During operation, the Project will include two retention basins and a perimeter ditch to manage stormwater runoff from the site post-construction.
State			
California Integrated Waste Management Act (CIWMA)	Controls solid waste collectors, recyclers, and depositors.	CIWMA	Project solid waste will be collected and disposed of by a collection company in conformance with the CIWMA.

[9] Appendix B (i)(1)(A)

LORS	Requirements/Applicability	Administering Agency	Project Conformance
Hazardous Waste Control Law (HWCL)	Controls storage, treatment, and disposal of hazardous waste.	DTSC	Hazardous waste will be handled by contractors in conformance with the HWCL.
Porter-Cologne Water Quality Control Act	Controls discharge of wastewater to surface waters and groundwaters of California.	Regional Water Quality Control Board	The Project will transport sanitary wastewater offsite and would implement BMPs in accordance with state and local regulatory requirements and the storm NPDES construction permit requirements. During operation, the Project may necessitate the use of onsite stormwater facilities, including detention or retention basins, to manage storm water runoff from the site post-construction.
California Fire Code	Controls storage of hazardous materials and wastes and the use and storage of flammable/combustible liquids.	Dixon Fire Protection District	Wastes will be accumulated and stored in accordance with Fire Code requirements.
Local			
Solano County General Plan	Provides guidance for the siting of new utility facilities and avoiding disruption to natural areas. Also provides guidance to ensure the safe and efficient disposal or recycling of wastes; to provide adequate water supply within the County; and to provide efficient sewer and stormwater drainage facilities and services.	Solano County Department of Resource Management, Planning Division	The Project will comply with the County's requirements for solid waste, water, wastewater, stormwater drainage, and gas and electric utility facilities as set forth in the General Plan, including goals, policies, and implementation programs from the Public Facilities and Services chapter: PF.G-1, PF.G-3, PF.P-2, PF.P-5, PF.I-4, PF.P-10, PF.P-14, PF.P-20, PF.I-11, PF.I-12, PF.I-13, PF.I-14, PF.P-27, PF.P-33, PF.P-34, PF.I-32, PF.P-39, PF.I-35, PF.P-41, PF.I-42, PF.P-49, PF.P-50, and PF.I-54. Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable General Plan goals and policies as related to utilities and services systems.
City of Vacaville General Plan	Provides information and policy guidance regarding the availability of public facilities and services needed to support existing and future development in Vacaville. Addresses the changing public services and infrastructure needs of Vacaville and provides for their logical and timely extension to keep pace with growth.	City of Vacaville, Department of Community Development, Planning Division	The Project will comply with the City's requirements for solid waste, water, wastewater, stormwater drainage, and gas and electric utility facilities as set forth in the General Plan, including goals, policies and actions from the Public Services and Facilities Element: PUB-9, PUB-P9.9, PUB-10, and PUB-P10.2. Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable General Plan goals and policies as related to utilities and services systems.
Solano County Multi-Jurisdictional Hazard Mitigation Plan	Provides guidance for natural and human-caused hazard planning and mitigation.	Solano County Department of Resource	A Hazardous Materials Business Plan will be prepared for submittal to the Solano County Department of Resource, and the Project would not impair the County's ability to implement the MJHMP.

4.19.7 Agencies and Agency Contacts[10, 11]

Several agencies, including USEPA at the federal level and the DTSC and California Environmental Protection Agency at the state level, regulate waste management and will be involved in the regulation of the waste generated by the Project. The regulations, however, are administered and enforced primarily through the Solano County Department of Resource Management, Environmental Health Services, which is the designated Certified Uniform Program Agency. Contacts for utilities and service systems, including waste management, are listed in Table 4.19-2.

Table 4.19-2. Agency Contacts for Utilities and Service Systems

Agency	Contact	Permit/Issue
Solano County Integrated Waste Management Local Task Force	601 Texas St. Fairfield, CA 94533 (707) 784-6765	Develops goals, policies, and procedures in accordance with California Integrated Waste Management Board rules and regulations. Guides the development of the City and County Source Reduction and Recycling Elements. Comments on and assists in the development of the Siting Element and Countywide Summary Plan. Recommends and coordinates the implementation of waste and disposal reduction programs.
Solano County Department of Resource Management, Environmental Health Services, Hazardous Materials Program	675 Texas Street, Suite 5500 Fairfield, CA 94553 (707) 784-6765	Hazardous Materials Business Plan; Spill Prevention, Control, and Countermeasure Plan
Regional Water Quality Control Board Central Valley Region	11020 Sun Center Drive, #200 Rancho Cordova, CA 95670 (916) 464-3291 info5@waterboards.ca.gov	Stormwater Permit for General Construction Activities
Department of Toxic Substances Control	1001 I Street Sacramento, CA 95814 (916) 255-3545	Application for USEPA Identification Number
Solano Irrigation District	810 Vaca Valley Parkway, Suite 201 Vacaville, CA 95688 (707) 448-6847	Local water purveyor

4.19.8 Required Permits and Permit Schedule[12]

Permits required and permit schedule for matters dealing with utilities and service systems, including waste management, for the Project are provided in Table 4.19-3.

Table 4.19-3. Permits and Permitting Schedule for Waste Management

Permit	Agency	Schedule
NPDES Permit for Construction Activities	Regional Water Quality Control Board Central Valley Region	30 days prior to start of construction
Hazardous Materials Business Plan	Solano County Department of Resource Management, Environment Health Services Division	30 days prior to start of operations

[10] Appendix B (i)(1)(B)
[11] Appendix B (i)(2)
[12] Appendix B (i) (3)

4.19.9 References

CalRecycle. 2024a. Solid Waste Information System Facility/Site Activity Details – Recology Hay Road Landfill. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/Site/Summary/3582 (accessed September 2024).

CalRecycle. 2024b. Solid Waste Information System Facility/Site Activity Details – Altamont Landfill & Resource Recovery. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/1194?siteID=3591 (accessed September 2024).

CalRecycle. 2024c. Solid Waste Information System Facility/Site Activity Details – Chemical Waste Management, Inc, Kettleman Hills Facility (CWM). Available online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/5930?siteID=4563 (accessed September 2024).

CalRecycle. 2024d. Solid Waste Information System Facility/Site Activity Details – Clean Harbors Buttonwillow Facility. Available online at: https://www2.calrecycle.ca.gov/SolidWaste/SiteActivity/Details/3922?siteID=733 (accessed September 2024).

DTSC (Department of Toxic Substances Control). 2024a. Envirostor - Commercial Offsite Hazardous Waste Permitted Facilities. Available online at: https://www.envirostor.dtsc.ca.gov/public/commercial_offsite.asp (accessed September 2024).

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PG&E (Pacific Gas and Electric). 2024. PG&E Company Profile. Available online at: https://www.pge.com/en/about/company-information/company-profile.html (accessed September 2024).

USEPA (U.S. Environmental Protection Agency). 2024a. Used Lithium-Ion Batteries. Available online at: https://www.epa.gov/recycle/used-lithium-ion-batteries#businesses (accessed September 2024).

USEPA. 2024b. Improving Recycling and Management of Renewable Energy Wastes: Universal Waste Regulations for Solar Panels and Lithium Batteries. Available online at:

https://www.epa.gov/hw/improving-recycling-and-management-renewable-energy-wastes-universal-waste-regulations-solar (accessed September 2024).

4.20 Wildfire

This section identifies and evaluates issues related to wildfire in the context of the Corby Battery Energy Storage System Project (Project) in accordance with California Energy Commission guidelines while simultaneously addressing considerations under the California Environmental Quality Act (CEQA). It includes the physical and regulatory setting, the criteria used to evaluate the significance of potential impacts, the methods used in evaluating these impacts, and the results of the impact assessment.

4.20.1 CEQA Checklist

		Potentially Significant Impact	Less Than Significant with Mitigation Incorporated	Less Than Significant Impact	No Impact
If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project:					
1.	Substantially impair an adopted emergency response plan or emergency evacuation plan?			X	
2.	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?			X	
3.	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?			X	
4.	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?			X	

4.20.2 Affected Environment[1]

Wildland fires in Solano County have the potential to affect grasslands, forest, and brushlands and, when uncontrolled, could cause property damage, human injury, and mortality. Wildfires ignite from both natural causes, such as lightning strikes, as well as human causes, such as fireworks or vehicle activity.

The degree of wildfire hazard is determined primarily by climate, topography, and fuel availability and type. This analysis includes a discussion of wildfire risk on the Project site.

4.20.2.1 Climate and Topography

The Project site is in north-central Solano County, approximately 250 feet southeast of the northern City of Vacaville jurisdictional boundary, and approximately 5 miles northeast of the city center. The Project site is located on the western side of California's central valley, which is characterized by hot, dry summers and foggy, rainy winters (State of California 2024). Solano County averages 23 inches of

[1] Appendix B (g) (19)

rainfall annually, most of which falls during the winter months (Best Places 2024). Elevation at the Project site ranges from approximately 75 to 77 feet above mean sea level.

4.20.2.2 Vegetation/Fuels and Ignition Sources

Fuels can include natural materials, such as dead tree leaves, twigs, branches, dead or live trees, brush, and dry grasses, as well as human-made structures. The Project site is developed as agricultural land that has been intermittently dry-farmed or lain fallow in recent years (Appendix 4.2-A). During the site reconnaissance conducted for the Phase I Environmental Site Assessment, which was prepared for the Project in July 2024, the Project site appeared to be a fallow crop field covered with native grass (Appendix 4.9-A). There are no structures present within the Project site, although an existing irrigation canal exists along the northern boundary of the site, parallel with Kilkenny Road. The Project site is also bound on all sides by existing agricultural lands, with rural residences located across Kilkenny Road directly to the north and across Byrnes Road directly to the east. Additional rural residences also exist in the project vicinity, both to the south and west of the Project site.

The Project will include an approximately 1.1-mile-long generation tie (gen-tie) line, portions of which will be installed overhead and underground. A majority of the gen-tie corridor is located within existing almond orchards, which will be removed prior to gen-tie line construction, along with the existing orchards within the gen-tie laydown area (Figure 1-3 in Section 1, *Executive Summary*). Native grasses within the Project site and almond trees within the gen-tie corridor and gen-tie laydown area would be considered existing fuels. Potential existing ignition sources include both natural and human-caused in connection with vehicles, agricultural equipment, and the nearby residences.

4.20.2.3 Fire History

Historically, the California fire season extends from June through October of each year during the hot, dry months. However, since 2010, the fire season throughout California has been getting longer, typically starting in May and extending into November, but wildfires can occur any time of the year. The California Department of Forestry and Fire Protection (CAL FIRE) has recorded 29 fires in Solano County since 2013. However, as fires are not jurisdictionally specific, all fires within 25 miles of the Project site were noted, which includes parts of Napa County, Yolo County, and Sacramento County. Additionally, according to the National Wildfire Coordinating Group (NWCG), a national interagency group comprising 12 member agencies, a large fire is defined as a fire burning more than a specified area of land (e.g., 300 acres, which is also the size threshold of a Class E Fire [NWCG 2024]). Fire classes range from Class A, at 0.25 acre or less, to Class G, at 5,000 acres or more (NWCG 2024). Therefore, fires larger than 300 acres and documented within 25 miles of the Project site are shown in Table 4.20-1, organized by date (CAL FIRE 2024a).

Table 4.20-1. Fires Over 300 Acres within 25 miles of the Project Site by Date

Name	Start Date	Counties	Acres Burned	Approximate Distance (mile) from Project Site
Putah Fire	10/3/2013	Napa	376	25 miles NW
Monticello Fire	7/4/2014	Yolo	6,488	13 miles NW
Wragg Fire	7/22/2015	Napa	8,051	13 miles NW

Name	Start Date	Counties	Acres Burned	Approximate Distance (mile) from Project Site
Cold Fire	8/2/2016	Yolo	5,731	12 miles NW
Winters Fire	7/6/2017	Yolo	1,700	9 miles NW
Partrick Fire (Central LNU Complex)	10/8/2017	Napa	8,283	25 miles W
Atlas Fire (Southern LNU Complex)	10/9/2017	Napa, Solano	51,624	18 miles W
Eighty-Eight Fire	7/18/2018	Yolo	822	15 miles N
Nelson Fire	8/10/2018	Solano	2,162	8 miles NW
Nurse Fire	11/8/2018	Solano	1,500	12 miles S
American Fire	10/6/2019	Napa	526	23 miles SW
Wildlife Fire	6/3/2020	Solano	300	13 miles SW
Quail Fire	6/6/2020	Solano	1,837	9 miles NW
LNU Lightning Complex	8/17/2020	Napa, Solano, Lake, Sonoma, Yolo	363,220	15 miles NW
Old Fire	5/31/2022	Napa	570	20 miles W

4.20.2.4 CAL FIRE-designated Wildfire Hazard Zones

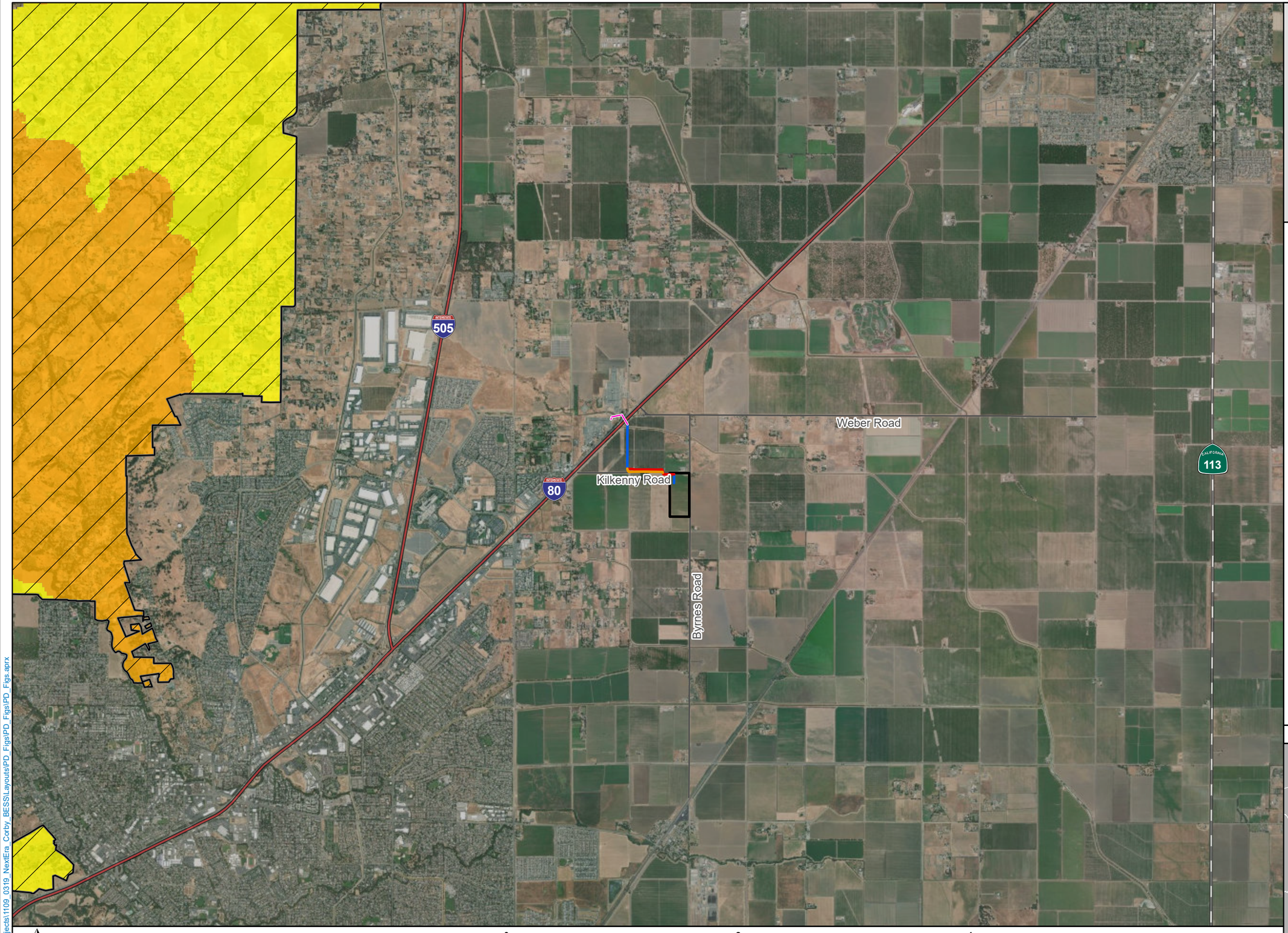
CAL FIRE has published Draft Fire Hazard Severity Zones (FHSZ) for both Local Responsibility Areas (LRA) and State Responsibility Areas (SRA). SRAs are the official boundaries where the State of California (through CAL FIRE) has the primary legal and financial responsibility for the prevention and suppression of wildland fires. According to the CAL FIRE FHSZ in the SRA Map, the Project Site and surrounding area, including the gen-tie corridor, is designated as Outside State Responsibility Area (Figure 4.20-1; CAL FIRE 2024b). The closest SRA Very High FHSZ is located approximately 7 miles to the west of the Project site[2]. The Project site and gen-tie corridor are entirely located within the LRA, which designates local fire protection departments as the responding agencies. The Project site and portion of the gen-tie corridor south of Interstate (I)-80 are designated as LRA Non-Wildland/Non-Urban. The portion of the gen-tie corridor north of I-80 is designated as LRA Moderate and Urban Unzoned (Figure 4.20-2; CAL FIRE 2007).

[2] Appendix B (g)(19)(A); Appendix B (g)(19)(B)

NextEra Energy Corby Battery Energy Storage Project

Figure 4.20-1 Fire Hazard Severity Zones in the SRA

Solano County, CA



Proposed Features
- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

Responsibility Areas
- Local Responsibility Area (LRA)
- State Responsibility Area (SRA)

Fire Hazard Severity Zones in SRA
- High
- Moderate

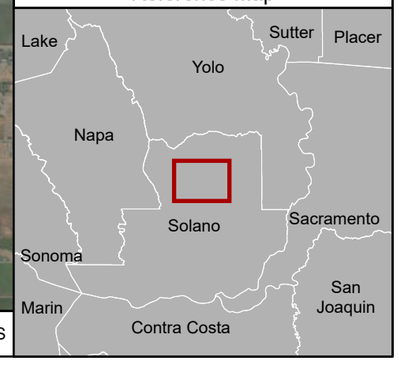
Transportation
- Interstate Highway
- State Highway
- Road

PG&E Features
- Gen-tie (Overhead; PG&E)

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:50,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 2 4 Miles

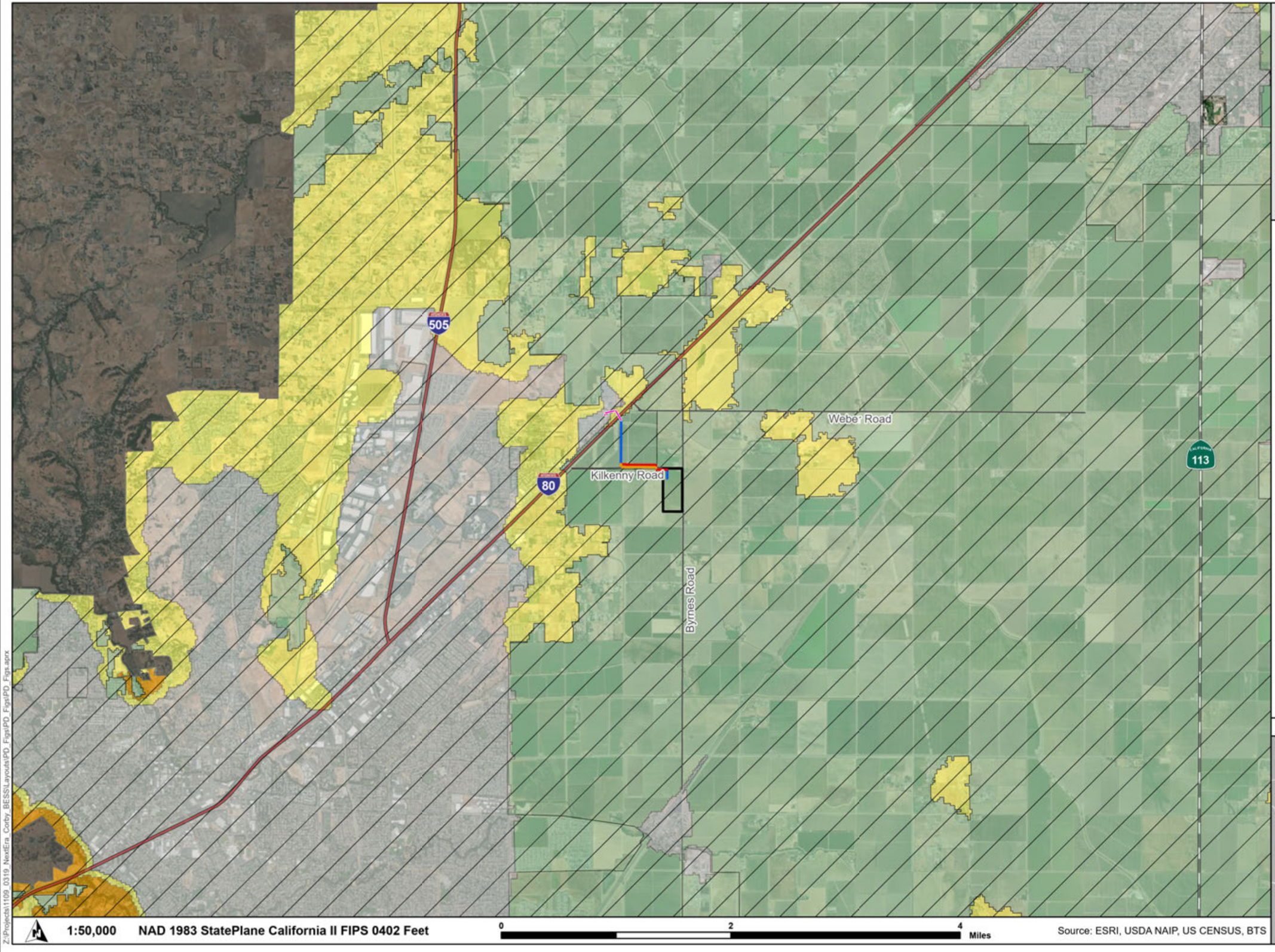
Source: ESRI, USDA NAIP, US CENSUS, BTS

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NextEra Energy Corby Battery Energy Storage Project

Figure 4.20-2 Fire Hazard Severity Zones in the LRA

Solano County, CA



Proposed Features
- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Project Site

Responsibility Areas
- Local Responsibility Area (LRA)
- State Responsibility Area (SRA)

Fire Hazard Severity Zones in LRA
- High
- Moderate
- Non-Wildland/Non-Urban
- Urban Unzoned

Transportation
- Interstate Highway
- State Highway
- Road

PG&E Features
- Gen-tie (Overhead; PG&E)

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:50,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 2 4 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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4.20.2.5 California Public Utilities Commission-designated Wildfire Hazard Zones

Pursuant to its Fire Safety Rulemaking, the California Public Utilities Commission (CPUC) mapped high fire threat areas where more stringent inspection, maintenance, vegetation clearance, and wire clearance requirements (as required by CPUC General Orders 95, 165, and 166, described in Section 4.20.6.2, below) would be implemented due to the elevated risk for powerline fires. The CPUC High Fire Threat District (HFTD) Map identifies three tiers of elevated risk for fires associated with utilities. The Project site and gen-tie line are not located in a CPUC-designated HFTD. The closest CPUC-designated HFTD is a Tier 2 District located approximately 4.3 miles west of the Project site (CPUC 2024). The closest CPUC-designated Tier 3 HFTD is located approximately 21 miles northwest of the Project site (CPUC 2024).

4.20.2.6 Fire Protection Services

As the Project site is located within the LRA, Dixon Fire Protection District (DFPD) would provide local fire services to the Project site. The nearest station is located approximately 6.3 miles northeast of the Project site and 7.8 miles by road with a drive time of approximately 12 to 15 minutes. However, the fire district has a joint agency contract and mutual aid agreement with neighboring fire departments including the Vacaville Fire Department that authorizes the closest agency to respond to the fire or other emergency first or support the DFPD if required (Sbozil 2024). The station is located at 205 Ford Way, Dixon, CA 95620. The station is an all-response agency that has the capacity to respond to hazardous material fires. The station houses a truck company, an engine company, and a water tender (Sbozil 2024). The Applicant met with the DFPD on October 11, 2024 to discuss the planned battery technology, industry testing requirements, and recommended fire response strategy. DFPD expressed concurrence with the Applicant's strategy for passive fire response rather than active fire suppression systems or use of water for suppression because lessons learned from recent BESS fires have shown that water has not effectively contained propagation and can exacerbate a fire event.

4.20.3 Environmental Analysis[3]

4.20.3.1 CEQA Impact Analysis

IMPACT 4.20-1: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project substantially impair an adopted emergency response plan or emergency evacuation plan? (Less than Significant Impact)[4]

The Project site and gen-tie corridor are not located in or near any SRAs or lands classified as Very High FHSZs as designated by CAL FIRE. The closest SRA Very High FHSZ is located approximately 7 miles to the west of the Project site (Figure 4.20-1). The Project site and gen-tie corridor are within the LRA and are designated as LRA Non-Wildland/Non-Urban south of I-80, and LRA Moderate and Urban Unzoned north of I-80. Given the designation of LRA Non-Wildland/Non-Urban, the Project is outside of areas identified by CAL FIRE as having substantial or very high risk. As the Project site is located within the LRA, the primary fire protection services in the vicinity of the Project site are provided by

[3] Appendix B (g) (19)
[4] Appendix B (g)(19)(A)

the DFPD. CAL FIRE is responsible for providing wildland fire protection, fire prevention, and resource management within SRA lands throughout California.

The Project will comply with all applicable CAL FIRE and DFPD requirements. The Project will also incorporate fire protection measures in accordance with the requirements set forth by the County. Project design will be compliant with National Fire Protection Association (NFPA) 855 (Standard for the Installation of Stationary Energy Storage Systems), which is the overarching standard governing all Energy Storage System (ESS) installations. All documentation requirements, including plans, specs, test and evaluation data, an emergency response plan, a hazard mitigation analysis, and all manuals will be developed in accordance with Chapter 4 of NFPA 855. A template of the Applicant's BESS Fire Response procedure is included as Appendix 4.9-B.

As discussed in Section 4.9, *Hazards and Hazardous Materials,* and Section 4.17, *Transportation,* the Project will not impair implementation of or physically interfere with the Solano County Emergency Operations Plan (County EOP) or the City of Vacaville Emergency Operations Plan (City EOP) during construction and operation. Additionally, the Project will not conflict with the Solano County Community Wildfire Protection Plan (CWPP) or impair the County's ability to implement any of its provisions, including the CWPP's recommendations for prioritizing fuels reduction projects, implementing measures to reduce structural ignitability, and developing methods for carrying out public education and outreach (Solano County 2023).

The Project site is located in a semi-rural area, just northeast of the City of Vacaville. The Project will not alter or impair any of the existing road networks and will not include permanent on-site employees during operation. The Project will 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, which is explained in greater detail in Section 4.17, *Transportation*. However, Kilkenny Road is not identified as an evacuation route in the Solano County General Plan. Furthermore, the Project will secure the necessary encroachment permits to allow for this temporary road closure and will coordinate with the County to ensure that this temporary road closure will not impair emergency response or evacuation in the area. Temporary closure of this roadway will still allow for local access and will 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 in a manner similar to existing conditions. Accordingly, the Project will not physically interfere with any public roadways or introduce substantial volumes of new traffic in a manner that will physically disrupt emergency response and evacuation capabilities. The analyzed Project-generated traffic will be mostly related to temporary construction-related traffic increases that will end when construction is completed. Some operational traffic will be required for routine inspections, minor repairs, and occasional maintenance activities. One major maintenance inspection will also take place annually, requiring approximately 20 personnel for approximately 1 week. However, the expected maintenance work will generate very limited traffic during Project operation. As a result, the Project will not impair implementation of or physically interfere with any adopted emergency response plan or emergency evacuation plan.

Further, the Project will not result in population growth in the area, which could strain emergency evacuation efforts. Construction will also be temporary and short term in nature, and construction of the Project, including site preparation and grading, battery energy storage system (BESS) installation, substation construction, gen-tie construction, and commissioning, is expected to require an average workforce of approximately 78 over the 14-month construction period, with a peak workforce of approximately 131 during the seventh month. The Project is not anticipated to increase the need for additional housing units, as no permanent operations and maintenance staff will be located at the Project site. Workers will be expected to commute to the site from local and regional towns and cities, rather than relocate. The BESS will be uncrewed and operational control will be from an off-site control room through a supervisory control and data acquisition system. The Project will require up to six workers to support onsite and offsite operations and maintenance (O&M) and administrative support functions. Onsite O&M activities will include performing routine visual inspections, executing minor repairs, and responding to needs for plant adjustment. As previously mentioned, one major maintenance inspection will occur each year, requiring approximately 20 personnel for approximately 1 week. In addition, the facility will require battery augmentation to maintain Project capacity approximately every 2 to 3 years; a crew of approximately 20 additional workers will be onsite for approximately 3 months to install and connect additional batteries. However, due to the self-operating nature of the facility, such actions will likely occur infrequently.

As described above, due to the semi-rural location of the Project and the minimal personnel required, the Project will result in a less than significant impact with regard to the substantial impairment of an adopted emergency response plan or emergency evacuation plan.

IMPACT 4.20-2: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project, 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 wildlife? (Less than Significant Impact) [5]

Construction

The Project site and gen-tie corridor are not located in or near any SRAs or lands classified as Very High FHSZs as designated by CAL FIRE (Figure 4.20-1). During Project construction, the primary fire hazards will be heat or sparks from vehicles and construction equipment. These hazards could potentially ignite dry vegetation at the Project site, especially during the warmer, drier months between June and October. Additionally, construction activities, such as welding and grinding, could generate sparks that will increase the likelihood of ignition. Thus, depending on the time of year and location of construction activities at the Project site, there could be a temporary increase in exacerbated fire risk in the area due to these factors. However, California Occupational Safety and Health Administration Title 8 Regulations include Subchapter 4, *Construction Safety Orders*, Article 36, *Fire Protection and Prevention*, which contains standard practices to minimize the potential for fires during construction. The Project will adhere to all applicable fire protection and prevention measures to limit the potential for fires during construction.

[5] Appendix B (g)(19)(A)

Combustible vegetation or agricultural products on and around the Project boundary will be actively managed by the Project owner or its affiliates during the construction phase of the Project to minimize fire risk. Combustible products will be either limited in height or removed. Additionally, the Project will include firebreaks around the site boundary in the form of access roads subject to County standards.

The Project site is located in a relatively flat area where slope would not exacerbate a potential fire. Within the City of Vacaville, the average hourly wind speed experiences mild seasonal variation over the course of the year. The windiest part of the year is from early April to early September, with wind speeds averaging 7.5 miles per hour. The windiest month of the year is July, with an average wind speed of 8.6 miles per hour (Weather Spark 2024). The Project will be constructed on a single terrace and will not be expected to affect wind patterns. Most importantly, the Project will not include any occupants who could be exposed to wildfire risks. Construction workers will be working onsite, but construction will be short term in nature and, upon completion, the Project site will not include any permanent workers or occupants.

For the reasons described above, the Project will not expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire due to slope, prevailing winds, or other factors, and no significant impact will occur during construction.

Operation

The Project will include BESS and other supporting electrical equipment elements that may be susceptible to fire. Project O&M may introduce potential ignition sources, such as transformers, inverters, electric transmission line (including the gen-tie line), substations, maintenance vehicles, gas/electric-powered machinery, and batteries. However, the potential fire risk is low for these Project components. All battery components for the BESS will be installed on concrete pads and contained within steel or aluminum enclosures to minimize the potential for sparks or ignition. Fire detection measures will be incorporated in the Project design in accordance with NFPA safety standards.

The Project will only use batteries that are UL certified and that include built-in fail safes designed specifically to prevent thermal runaway and the spread of fire. The proposed BESS will also come pre-fabricated with smoke and fire detection systems, as required by Chapter 4.8 of NFPA 855 and in accordance with NFPA 72. Fire suppression and control is typically not installed and is not required by the standard for outdoor, non-walk-in systems, in accordance with Chapter 4.9 of NFPA 855. Unless exempted elsewhere in the standard, the Project's installations will be in full compliance with NFPA 855 Table 9.5.2, Outdoor Stationary ESS Installations, and Table 9.6.5, Electrochemical ESS Technology-Specific Requirements. Thermal runaway protection will be provided by physical barriers and a UL1973 listed battery management system, in accordance with NFPA §9.6.5.5.2. The proposed BESS will also come equipped with an NFPA 68 and/or NFPA 69 compliant deflagration prevention and control system, in accordance with §9.6.5.6.3. NFPA 855 also aligns with the 2021 International Fire Code (IFC), as shown in Table 4.9-5 of Section 4.9, *Hazards and Hazardous Materials.* This will limit the ability of onsite fires and pollutants to spread beyond the Project site. Fire safety systems will be consistent with local zoning and fire department requirements. For additional information related the Project's fire safety system, refer to Section 2.0, *Project Description.* For additional information related

to the management of Project-related hazards and pollutants, refer to Section 4.9, *Hazards and Hazardous Materials.*

Prior to operations, the Applicant will meet with the appropriate local fire departments to provide a tour of the site, including review of access points and major Project components; review the site's emergency response plan, which will include Material Safety Data Sheets as appropriate; and educate and train first responders with regard to any specific safety concerns related to the use of battery storage components and the safety systems in place.

The Project will also be designed and operated in compliance with all applicable requirements to minimize risk of fire from stationary BESS and contain fire in the event of such an incident, including California Fire Code (CFC) Chapter 12 Energy Systems, which adopts the 2021 IFC with amendments. The Project will also comply with applicable county and state fire code requirements, standards from Underwriters Laboratories (UL; safety organization), and the NFPA. Additionally, Article 480 of the National Electrical Code identifies insulation and venting requirements for stationary storage batteries to further reduce potential fire risk. Intermittent maintenance activities could increase the potential for ignition on-site due to the presence of vehicles and use of equipment; however, given the low frequency and nature of maintenance activities, Project O&M will not significantly exacerbate wildfire risks. However, most importantly, the Project site will not include any occupants which could be exposed to wildfire risks.

For the reasons described above, the Project will not expose Project occupants to pollutant concentrations from a wildfire or the uncontrolled spread of wildfire due to slope, prevailing winds, or other factors, and no significant impact will occur during operation.

IMPACT 4.20-3: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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? (Less than Significant Impact)[6]

The Project site and gen-tie corridor are not located in or near any SRAs or lands classified as Very High FHSZs as designated by CAL FIRE (Figure 4.20-1). Project components will include the installation and maintenance of infrastructure associated with the BESS, such as access roads and powerlines. The Project will include powerlines (including the proposed gen-tie line) and other electrical components, such as transformers, inverters, substations, maintenance vehicles, gas/electric-powered machinery, and batteries. The proposed gen-tie line and tie-in to the existing Pacific Gas and Electric Company (PG&E) Vaca-Dixon Substation will also be required to comply with transmission vegetation management standards established by North American Electric Reliability Corporation (NERC). The Project will also include landscaping along the northern and eastern boundaries of the Project site, which will comprise drought-tolerant and native vegetation. All landscaping will comply with County requirements and will be actively managed by the Project owner or its affiliates during operation.

[6] Appendix B (g)(19)(A)

The Project will be designed in compliance with federal, state, and local worker safety and fire protection codes and regulations, which would minimize the potential for the occurrence of fire. As described in Section 2.3.6, *Fire Protection,* of Chapter 2, *Project Description,* each battery enclosure unit will have a fire rating in conformance with local fire authority and County standards, via compliance with the 2022 California Fire Code. The Project's fire protection design will comply with California Fire Code Section 1207 Electrical Energy Storage Systems, which adopts the 2021 IFC with amendments. A representative fire protection system schematic is provided in Appendix 2-D. Project maintenance and operation may introduce potential ignition sources, such as transformers, inverters, electric transmission line (including the gen-tie line), substations, maintenance vehicles, gas/electric-powered machinery, and batteries. However, the potential fire risk is low for these Project components. All battery components for the BESS will be installed on concrete pads and contained within steel or aluminum enclosures to minimize the potential for sparks or ignition. Fire detection measures will be incorporated in the Project design in accordance with CFC and NFPA safety standards. Vegetation management will also occur along the gen-tie corridor and around the associated transmission towers in accordance with the 2022 CFC and California Public Resources Code (PRC) requirements.

The Project will also comply with applicable local and state fire code requirements, standards from UL (safety organization), and the NFPA. Specifically, the selected battery technology for the Project will comply with UL 9540A testing. UL 9540A testing is performed by the battery manufacturer/vendor to assess thermal runaway propagation and mitigate fire risk. Some of the measures to mitigate fire risk include heating, ventilation, air conditioning, early smoke detection, alarms, deflagration control, and remote monitoring.

The latest UL 9540A testing criteria for battery units such as those proposed for the Project specifically forces a thermal runaway event to analyze the ability of the system design to mitigate such an event and prevent propagation. The latest technology in battery storage has established a design such that, in the unlikely scenario of a thermal event , the thermal event would be contained to a single battery container and not result in thermal runaway that could affect neighboring units. The fire protection and prevention technology employed in battery storage units based on battery models available on the current market is specifically designed to prevent a thermal event. Subsequently, the technology is put through UL9540A testing to confirm a thermal runaway event that could result in a fire hazard would not occur. Such a thermal event is extremely rare and difficult to incite. In fact, a 2016 study conducted by the Fire Protection Research Foundation titled "Hazard Assessment of Lithium-Ion Battery Energy Storage Systems" tested an older model of battery in an attempt to intentionally cause a thermal runaway event to determine the potential for thermal runaway, and the attempt failed, demonstrating the fire prevention integrity of such units to prevent combustion and thermal runaway from occurring (Blum and Long 2016). UL9540A cell and module test reports for the proposed technology are provided in Appendix 4.9-C.

Compliance with these standards and certifications includes a Battery Management System design that detects high temperatures at the battery cell or battery module level and automatically shuts down the battery rack in response. Furthermore, installation of battery units will follow manufacturer specifications for the spacing of batteries and clearance distances to further prevent thermal runaway

propagation. Each unit will also be equipped with thermal management systems for thermal management of the batteries. Power to the thermal management system and lighting will be provided through a connection to the on-site station service transformer with connection lines installed above and/or below ground. Cabinets housing batteries are designed with deflagration control and are equipped with a fire detection system that alerts the remote monitoring facility if abnormal conditions are detected.

The Project will require water for dust suppression during construction activities, and operational water use will be nominal. Combustible vegetation or agricultural products on and around the Project boundary will be actively managed by the Project owner or its affiliates during the construction and operation phases of the Project to minimize fire risk. Combustible products will be either limited in height or removed. These measures (i.e., dust suppression) and Project components (i.e., batteries) are considered to be part of the Project. Accordingly, the environmental impacts that could result from Project measures and components have been analyzed throughout this Application, and no additional impacts (beyond those that are identified in this Application) will occur. The Project will not require the installation or maintenance of associated infrastructure outside of these Project measures and components included as part of the Project and analyzed in this Application.

For the reasons described above, the Project will have a less than significant impact related to the installation or maintenance of associated infrastructure that may exacerbate fire risk or that may result in temporary or ongoing impacts to the environment.

IMPACT 4.20-4: If located in or near state responsibility areas or lands classified as very high fire hazard severity zones, would the project 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? (Less than Significant Impact)[7]

The Project site and gen-tie corridor are not located in or near any SRAs or lands classified as Very High FHSZs as designated by CAL FIRE (Figure 4.20-1). The Project site is in a relatively flat area, where development of the Project will not significantly affect runoff and drainage patterns. However, site preparation and grading will be required, especially for the construction of the Project substation, the battery enclosures, and inverter pads, and the Project will require soil import. The total graded area for the Project site will be approximately 18.5 acres. A larger Project disturbance footprint, including the Project site, gen-tie construction areas, laydown areas, and construction buffers, will total approximately 67.3 acres. However, no grading that may obstruct, impede, or interfere with the natural flow of storm waters outside of the Project site and gen-tie corridor will occur. The Project will include two retention basins on the Project site to manage runoff flows and to ensure no net increase in the peak runoff exiting the Project site to the downstream drainage system. Additionally, as discussed in Section 4.7, *Geology, Soils, and Paleontological Resources,* of this Application, there are no mapped landslides on or around the Project site (DOC 2024). Accordingly, flooding or landslides due to runoff, slope instability, or drainage will be adequately managed during Project operation through proper site design.

[7] Appendix B (g)(19)(A)

As discussed in Section 4.10, *Hydrology/Water Quality,* and in accordance with Project Design measure **HYD-03**, a Stormwater Pollution Prevention Plan (SWPPP) will be developed and implemented during site preparation and construction activities. The SWPPP will incorporate stormwater best management practices to control erosion, sediment transport, and pollutant discharge during construction. The SWPPP will apply to the entire Project, including within the Project site and along the gen-tie corridor. Such practices include, for example, the use of water trucks to manage dust; silt fencing, straw wattles, temporary catch basins, and inlet filters to control stormwater; and truck tire muck shakers or similar devices to prevent mud and debris from being carried onto roadways. Finally, as discussed in Section 4.10, *Hydrology/Water Quality,* impacts associated with runoff and erosion due to water flows will be less than significant. Thus, the Project will not result in changes to runoff, slope instability, or drainage patterns that have the potential to exacerbate downslope or downstream flooding or landslides and thereby expose people or structures to associated risks.

Regarding the exposure of people or structures to wildfire risks, the Project will not result in the exposure of construction or operation workers to significant wildfire risks, as discussed under the previous **Impacts 4.20-1, 4.20-2,** and **4.20-3** above. Additionally, potential fire risk of Project structures will be low, including from transformers, inverters, electric transmission line (including the gen-tie line), substations, maintenance vehicles, gas/electric-powered machinery, and batteries. All battery components for the BESS will be installed on concrete pads and contained within steel or aluminum enclosures to minimize the potential for sparks or ignition. Fire detection measures will be incorporated in the Project design in accordance with NFPA safety standards. Such measures will reduce wildfire risk on-site, thereby reducing the secondary risk of runoff, post-fire slope instability, or drainage changes due to onsite fires.

Other people and structures with the potential to be exposed to runoff, post-fire slope instability, or drainage changes include semi-rural residences north, east, west, and south of the Project site. However, for the reasons previously discussed under **Impacts 4.20-1, 4.20-2,** and **4.20-3** above, these residences will not be exposed to significant risks, including downslope or downstream flooding or landslides, as a result of runoff, post-fire slope instability, or drainage changes.

For the reasons described above, the Project will have a less than significant impact with regard to the exposure of 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.

4.20.3.2 PG&E Facilities

To accommodate the Project, PG&E will be responsible for siting, design, and construction of the 230-kilovolt gen-tie line from the point of change of ownership (POCO) to their substation, including new interconnection facilities. The Applicant will design, construct, own, and operate the southern 0.9-mile portion of the gen-tie from the Project substation to the POCO within the gen-tie corridor south of Interstate 80. PG&E will be responsible for the 0.2-mile-long gen-tie between the POCO and the point of interconnection at the PG&E Vaca-Dixon Substation, including the final five structures, the Interstate 80 crossing, and the New Corby Bay, as shown in Figure 1-3 of Section 1.0, *Executive Summary*. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

As a result of PG&E's construction of the gen-tie from the POCO to their substation, it is anticipated that there would be minimal impacts related to wildfire hazards. These improvements are not likely to impede or conflict with any emergency plans or evacuation routes, nor would the impacts exacerbate wildfire risks and the potential pollutants caused by wildfires. PG&E will coordinate with the California Department of Transportation and Solano County through their standard processes to secure encroachment approvals for the I-80 crossing. The improvements would not build any housing facilities and, thus, would not increase the risk of direct impacts to occupants caused by wildfires. Construction impacts would be similar to those of the BESS facility and Applicant gen-tie construction and would be regulated by the same regulations as previously discussed. Operation impacts would also be similar to those of the BESS facility and Applicant portion of the gen-tie, which would be less than significant. The gen-tie line is also within a relatively flat area, which would require minimal or no grading at structure locations, and would not result in significant impacts related to flooding or landslides as a result of runoff, post-fire slope instability, or drainage changes. The gen-tie line would also be designed, operated, and ultimately disposed of in compliance with all applicable requirements, including the CFC. Therefore, there will be no significant impacts and no mitigation will be required.

4.20.4 Cumulative Effects[8]

The Project will not impair the implementation of an emergency response or emergency evacuation plan. Therefore, the Project will not cause or contribute to any cumulative impacts to emergency response or evacuation. The potential for the Project to cause or contribute to a potential, significant cumulative impact with respect to the remaining wildfire considerations is evaluated below.

The geographic scope for potential cumulative impacts to wildfire frequency and scale encompasses the Project site and the surrounding areas, which consist of primarily agricultural, residential, and utility land uses. Ongoing impacts relating to wildfire considerations of past projects are reflected in the environmental setting described in Section 4.20.2. While existing land uses could provide ignition sources, operating battery energy storage projects and agricultural uses do not present a significant risk with respect to ignition sources. In combination with other projects in the vicinity, the Project could increase the potential for ignition sources; however, given the Project's designation as a remote outdoor installation, in accordance with the CFC, and the lack of dense vegetation within the geographic scope, the impact of an increase in ignition sources of the Project in combination with the incremental impacts of other cumulative projects will be less than significant. Additionally, other projects will be subject to compliance with federal, state, and local worker safety and fire protection codes and regulations, and applicable fire protection standards, similar to the Project. Therefore, the Project will not contribute to significant cumulative wildfire impacts.

4.20.5 Mitigation Measures

There will be no significant impacts to associated with wildfire; therefore, no mitigation is required.

[8] Appendix B (g) (19)

4.20.6 Laws, Ordinances, Regulations, and Standards

4.20.6.1 Federal

North American Electric Reliability Corporation Standards

NERC is a nonprofit corporation comprising six regional reliability councils. The overarching goal of NERC is to ensure the reliability of the bulk power system in North America. To achieve its goal, NERC develops and enforces reliability standards, monitors the bulk power systems, and educates, trains, and certifies industry personnel (NERC 2024). To improve the reliability of regional electric transmission systems and in response to the massive widespread power outage that occurred on the Eastern Seaboard in 2003, NERC developed a transmission vegetation management program. The program is applicable to all transmission lines operated at 200 kilovolts and above to lower voltage lines designated by the Regional Reliability Organization as critical to the reliability of the electric system in the region.

The transmission vegetation management program, which became effective on April 7, 2006, establishes requirements of the formal transmission vegetation management program. Requirements include identifying and documenting clearances between vegetation and any overhead, ungrounded supply conductors, and taking into consideration transmission line voltage, the effects of ambient temperature on conductor sag under maximum design loading, fire risk, line terrain and elevation, and the effects of wind velocities on conductor sway. The clearances identified must be no less than those set forth in the Institute of Electrical and Electronics Engineers Standards Association Standard 516-2003 (*Guide for Maintenance Methods on Energized Power Lines*) (IEEE 2003), which establishes minimum vegetation-to-conductor clearances to maintain electrical integrity of the electrical system. The Project would comply with all applicable NERC and IEEE standards, including vegetation management requirements for the gen-tie line and associated transmission structures.

Disaster Mitigation Act of 2000

The Disaster Mitigation Act of 2000 provides the legal basis for the Federal Emergency Management Agency's (FEMA) mitigation planning requirements for state, local, and tribal governments as a precursor to mitigation grant assistance. The Disaster Mitigation Act of 2000 requires that local governments prepare a hazard mitigation plan that must be reviewed by the State Mitigation Officer, approved by FEMA, and renewed every 5 years. The plan must include a planning process, a risk assessment, a mitigation strategy, and plan maintenance and updating procedures to identify the natural hazards, risks, and vulnerabilities of the area under the jurisdiction of the government. Natural hazards include earthquakes, tsunamis, tornadoes, hurricanes, flooding, and wildfires. The current Solano County Multi-Jurisdictional Hazard Mitigation Plan was adopted in March 2022 (Solano County 2022). The Project would not impair the County's ability to implement the Multi-Jurisdictional Hazard Mitigation Plan (MJHMP).

4.20.6.2 State

California Public Resources Code

California PRC Section 4290 requires CAL FIRE to adopt regulations implementing minimum fire safety standards for defensible space that would be applicable to lands within the SRA and lands within Very High FHSZs.

SRAs are defined by California PRC Section 4102 as areas of the state in which CAL FIRE has determined that the financial responsibility for preventing and suppressing fires lies with the State of California. SRAs are lands in California where CAL FIRE has legal and financial responsibility for wildfire protection. SRA lands typically are unincorporated areas of a county, are not federally owned, have wildland vegetation cover, have housing densities lower than three units per acre, and have watershed or range/forage value. In SRAs, CAL FIRE is required to delineate three hazard ranges: Moderate, High, and Very High; whereas LRAs, which are under the jurisdiction of local entities (e.g., cities, counties), are required to only identify Very High fire hazard severity zones. The hazard ranges are measured quantitatively based on vegetation, topography, weather, crown fire potential (a fire's tendency to burn upward into trees and tall brush), and ember production and movement within the area of question. Where SRAs contain built environment or development, the local government agency assumes responsibility for fire protection.

The California PRC includes fire safety provisions that apply to SRAs during the time of year designated as having hazardous fire conditions. During the fire hazard season, these regulations restrict the use of equipment that may produce a spark, flame, or fire; require the use of spark arrestors on equipment that has an internal combustion engine; specify requirements for the safe use of gasoline-powered tools in fire hazard areas; and specify fire-suppression equipment that must be provided on-site for various types of work in fire-prone areas. Additional codes require that any person who owns, controls, operates, or maintains any electrical transmission or distribution line must maintain a firebreak clearing around and adjacent to any pole, tower, or conductors that carry electric current as specified in PRC Sections 4292 and 4293. Section 4292 also requires that a 10-foot area around the base of poles be cleared of all flammable vegetation.

LRAs include lands that do not meet criteria for SRAs or federal responsibility areas, or are lands in cities, cultivated agricultural lands, and nonflammable areas in the unincorporated parts of a county. LRAs can include flammable vegetation and wildland-urban interface areas. LRA fire protection is provided by the local fire departments, fire protection districts, county fire departments, or by contract with CAL FIRE. The Project would comply with all applicable sections of the PRC, including vegetation management requirements for the gen-tie line and associated transmission structures.

California Fire Code

The CFC is contained within Title 24, Chapter 9, of the California Code of Regulations. Based on the IFC, the CFC is created by the California Buildings Standards Commission and regulates the use, handling, and storage requirements for hazardous materials, including ignitable materials, at fixed facilities. Similar to the IFC, the CFC and the California Building Code use a hazards classification system to determine the appropriate measures to incorporate to protect life and property. The CFC

includes provisions and standards for emergency planning and preparedness, fire service features, fire protection systems, hazardous materials, fire flow requirements, fire hydrant locations and distribution, and the clearance of debris and vegetation within a prescribed distance from occupied structures in wildfire hazard areas. Chapter 49 of the CFC also includes requirements for wildland-urban interface fire areas, which prescribes construction materials and methods in FHSZs; requirements generally parallel California Building Code Chapter 7A. The Project would comply with all applicable provisions of the CFC.

Very High Fire Hazard Severity Zones Government Code 51177

Very High FHSZs are defined by Government Code Section 51177 as areas designated by the Director of CAL FIRE as having the highest possibility of having wildfires. These zones are based on consistent, statewide criteria and the severity of fire hazard that is expected to prevail in those areas. The zones are also based on fuel loading, slope, fire weather, and other factors, such as wind, which have been identified by CAL FIRE as a major cause of the spreading of wildfires. FHSZ maps are produced and maintained for each county. The Project site is not located within a Very High FHSZ and would not be subject to any requirements specific to these areas.

2019 Strategic Fire Plan for California

Developed by the Board of Forestry and Fire Protection, the Strategic Fire Plan outlines goals and objectives to implement CAL FIRE's overall policy direction and vision. The 2019 Strategic Fire Plan goals revolve around fire prevention, natural resource management, and fire suppression efforts, as broadly construed (CAL FIRE 2019). The Strategic Fire Plan is currently being updated and is expected to be approved in Q3 2024 (CAL FIRE 2024c). The Project would not impair the State's ability to implement the provisions of the Strategic Fire Plan.

California Emergency Response Plan

Pursuant to the Emergency Services Act (Government Code §Section 8550 et seq.), California has developed an Emergency Plan to coordinate emergency services provided by federal, state, and local governmental agencies and private persons. Response to hazardous materials incidents is one part of this plan. The plan is administered by the California Office of Emergency Services, which coordinates the responses of other agencies, including the U.S. Environmental Protection Agency, California Highway Patrol, the California Department of Fish and Wildlife, the Regional Water Quality Control Board, the local air quality district, and local agencies. The Project site is located within the Bay Area Air Quality Management District.

The State Emergency Plan defines the "policies, concepts, and general protocols" for the proper implementation of the California Standardized Emergency Management System. The Standardized Emergency Management System is an emergency management protocol that agencies within the state of California must follow during multi-agency response efforts whenever state agencies are involved. The Project would not impair the State's ability to implement the provisions of the State Emergency Plan.

California Public Utilities Commission Requirements

General Order 95

General Order 95 governs the design, construction, and maintenance of overhead electrical lines and applies to work conducted by PG&E and the other Investor-owned Utilities (IOU)[9]. The replacement of poles, towers, or other structures is considered reconstruction and requires adherence to all strength and clearance requirements of this order. CPUC Decision 17-12-024 created enhanced requirements under Rule 18A, Rule 35, and Rule 38, which apply to overhead electric lines located in Tier 2 or Tier 3 HFTDs. The Project site is not located in a CPUC designated HFTD (CPUC 2024); therefore, the enhanced requirements would not apply to the Project.

General Order 165

General Order 165 establishes requirements for the inspection of electric distribution and transmission facilities that are not contained within a substation. Utilities must perform "patrol" inspections, defined as a simple visual inspection of utility equipment and structures that is designed to identify obvious structural problems and hazards, and 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 5 years for all overhead conductors and cables, transformers, switching/protective devices, and regulators/capacitors. By July 1 of each year, each utility subject to this General Order must submit an annual report of its inspections for the previous year under penalty of perjury (CPUC 2017a). The Project would comply with the applicable provisions of General Order 165.

General Order 166

General Order 166 Standard 1.E requires IOUs to develop a Fire Prevention Plan, which describes measures that the utility will implement to mitigate the threat of powerline fires generally. Additionally, this standard requires that IOUs outline a plan to mitigate powerline fires when wind conditions exceed the structural design standards of the line during a Red Flag Warning[10] in a high fire threat area. Fire Prevention Plans created by IOUs are required to identify specific parts of the utility's service territory where the conditions described above may occur simultaneously. Standard 1 also requires that utilities prepare an emergency response plan. PG&E's Emergency Response Plan, prepared in compliance with Standard 1, is described below. Standard 11 requires that utilities report annually to the CPUC regarding compliance with General Order 166 (CPUC 2017b). The Project would comply with the applicable provisions of General Order 166.

PG&E Company Emergency Response Plan

PG&E's Company Emergency Response Plan describes and formalizes PG&E's in-place plans and protocols for response to emergencies. The plan identifies potential hazards, available resources to respond to emergencies, internal communication protocols, and operational structure. Additionally, PG&E's Wildfire Safety Operations Center operates 24 hours per day during wildfire season (PG&E

[9] IOUs are private electricity and natural gas providers. The CPUC regulates IOUs.

[10] A "Red Flag Warning" is issued by the National Weather Service to alert fire departments of the onset, or possible onset, of critical weather and dry conditions that could lead to rapid or dramatic increases in wildfire activity.

2019). The Project would not impair PG&E's ability to implement the provisions of the PG&E Company Emergency Response Plan.

PG&E Wildfire Mitigation Plan

Pursuant to Senate Bill (SB) 901 and SB 1028, PG&E submitted its 2023 - 2025 Wildfire Mitigation Plan (WMP) to the California Office of Energy Infrastructure Safety on March 27, 2023, which was approved on September 27, 2023. The WMP describes PG&E's approach to mitigate wildfire risk and is characterized by undergrounding powerlines to harden the system, expanding its Enhanced Powerline Safety Settings to all risk areas, applying new mitigation technology, continuing aggressive vegetation management, performing enhanced risk inspections and risk modeling, utilizing cameras and weather stations to improve situational awareness, and utilizing Public Safety Power Shutoffs as a final safety action.

The WMP states: "PG&E's objectives over the 2023-2025 WMP cycle are to use risk-informed decision-making to minimize ignition risk and outage impacts" (PG&E 2023). The Project would comply with the applicable provisions of the PG&E Wildfire Mitigation Plan and would not impair PG&E's ability to implement the provisions of the plan.

Senate Bill 1028

SB 1028 (2016) requires each electrical corporation to construct, maintain, and operate its electrical lines and equipment in a manner that will minimize the risk of catastrophic wildfire posed by those electrical lines and equipment, and makes a violation of these provisions by an electrical corporation a crime under state law. The bill also requires each electrical corporation to annually prepare a WMP and submit to the CPUC for review. The plan must include a statement of objectives, a description of preventive strategies and programs that are focused on minimizing risk associated with electric facilities, and a description of the metrics that the electric corporation uses to evaluate the overall WMP performance and assumptions that underlie the use of the metrics. PG&E adopted the 2023-2025 WMP on September 27, 2023 (PG&E 2023). The Project would comply with the applicable provisions of the PG&E Wildfire Mitigation Plan and would not impair PG&E's ability to implement the provisions of the plan.

Senate Bill 901

SB 901 (2018) expanded upon the WMP requirements of SB 1028 and included a number of provisions related to wildfire risk and management in California including, but not limited to, the following: budget adjustments related to emergency response and readiness, the creation of a CAL FIRE Wildfire Resilience Program, and increasing the maximum penalties that can be issued by the CPUC to a public utility that fails to comply with CPUC requirements. Additionally, the legislation requires that utilities prepare WMPs that include elements specified in the bill, such as the following:

1) A description of the preventive strategies and programs to be adopted by the electrical corporation to minimize the risk of its electrical lines and equipment causing catastrophic wildfires, including consideration of dynamic climate change risks.

2) Protocols for disabling reclosers[11] and deenergizing portions of the electrical distribution system that consider the associated impacts on public safety, as well as protocols related to mitigating the public safety impacts of those protocols, including impacts on critical first responders and on health and communication infrastructure.

3) Particular risks and risk drivers associated with topographic and climatological risk factors throughout the different parts of the electrical corporation's service territory.

These WMPs are required to be reviewed by an independent evaluator. The Project would comply with the applicable provisions of the PG&E Wildfire Mitigation Plan and would not impair PG&E's ability to implement the provisions of the plan.

4.20.6.3 Local

Solano County Zoning Ordinance

The Project site and the initial portion of the gen-tie line south of Kilkenny Road are located within the Exclusive Agriculture (A-40) zoning district. Pursuant to Section 28.21.11 of the Solano County Zoning Ordinance, agricultural districts are established to promote and preserve agriculture within the County, including allowing agricultural-related support uses, excluding incompatible uses, and protecting the viability of the family farm. Although the County's Zoning Ordinance does not currently contain criteria specifically for BESS facilities, Section 28.21.20 of the Solano County Zoning Ordinance allows for BESS facilities within the A-40 zoning district with a Use Permit as "Utility facilities or infrastructure, outside of right-of-way." The Project is consistent with the County zoning.

Solano County General Plan

The purpose of the County General Plan is to guide development and conservation within the unincorporated County. Under California law, every county and city must adopt a comprehensive, long-term general plan to direct physical development within its jurisdiction. General plans serve as a blueprint for future development and conservation efforts, with goals and policies providing a solid basis for future decisions related to land use, development, and conservation. The County General Plan is also the primary document used by the County to regulate land use under California law. Zoning and development codes, specific plans, and individual public and private development proposals must be consistent with General Plan goals, policies, and standards (Solano County 2008).

The Project site lies within Solano County and is covered by the County General Plan. A portion of the gen-tie line lies within the City of Vacaville and will be covered by the City's General Plan, as discussed below. The Project would be considered an allowable use under the Agriculture designation of the County's General Plan. The Solano County General Plan includes the following goals, policies, and implementation measures that are relevant to the Project, and specifically to wildfire. Refer also to Section 4.11, *Land Use and Planning*, of this application for a consistency analysis with applicable County General Plan goals, policies, and implementation measures as related to wildfire.

[11] Reclosing devices, such as circuit breakers, are used to isolate circuit segments when abnormal system conditions are detected.

Public Health and Safety Element

Goal HS.G-1: *Minimize the potential for loss of life and property resulting from natural or human-caused hazards.*

Policy HS.P-20*: Require that structures be built in fire defensible spaces and minimize the construction of public facilities in areas of high or very high wildfire risk.*

Policy HS.P-23*: Work with fire districts including the Sonoma-Lake-Napa Fire Unit, other agencies and property owners to ensure consistency with related plans including the Unit Fire Plan and the Solano County Emergency Operations Plan, and to coordinate efforts to prevent wildfires and grassfires through fire protection measures such as consolidation of efforts to abate fuel buildup, access to firefighting equipment, and provision of water service.*

Implementation Program HS.I-26*: Work with fire districts to ensure that new development is built to support effective firefighting. Continue to seek fire district input on new development projects and ensure that such projects incorporate fire-safe planning and building measures. Such measures may include clustering housing, buffering properties, creating defensible space around individual units, using fire-resistant building materials, installing sprinkler systems, and providing adequate on-site water supplies.*

Public Facilities and Services Element

Goal PF.G-3: *Provide effective and responsive fire and police protection, and emergency response services.*

Policy PF.P-39: *Identify and require incorporation of fire protection and emergency response measures in the review and approval of new projects.*

Implementation Measure 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.*

Solano County Emergency Operations Plan

The purpose of the County EOP is to provide information about how the Solano County Operational Area will prepare for, respond to, and recover from large scale incidents within the jurisdiction. Agencies, organizations, and departments are expected to perform their roles and responsibilities in good faith and as effectively as possible within the constrained and limited operational capabilities encountered during emergency response. The County EOP is divided into four parts, including the Base Plan, which identifies incident response policies, describes the response organization, and assigns tasks. The other three parts include the Functional Annexes, the Hazard-specific Appendices, and additional supporting information for the entire EOP.

The County EOP's Functional Annexes focus on the operational functions that are critical to a successful response and define who is responsible for carrying them out. The Functional Annexes

describe the policies, processes, roles, and responsibilities that agencies and departments carry out before, during, and after an incident or event. The Functional Annexes also identify the Operational Area's existing capacity to carry out functions and establish preparedness goals to support the jurisdiction in maintaining or improving the identified response capacity.

The County EOP's Hazard-Specific Appendices focus on preventative, protective, response, and recovery actions taken regarding a specific hazard, including but not limited to identifying which functions should be activated, recognizing incident-specific resources, and recognizing incident-specific considerations.

The fourth part of the County EOP includes supporting documentation such as the acronyms and glossary (Solano County 2024). The Project would not impair the County's ability to implement the County EOP.

Solano County Community Wildfire Protection Plan

The CWPP for Solano County, adopted October 2023, provides a comprehensive analysis of wildfire hazards and risks in the wildland-urban interface of Solano County and provides mitigation strategies. These mitigation strategies are organized into three main goals:

1. Restore and Maintain Landscapes, which includes recommendations for hazardous fuel reduction;
2. Fire-Adapted Communities, which includes recommendations for public education/outreach and reducing structural ignitability; and
3. Wildfire Response, which includes recommendations for improving fire response capabilities.

The overarching goal of the CWPP is to enable local communities to improve their wildfire mitigation capacity while working with government agencies to identify high fire risk areas and prioritize areas for mitigation, fire suppression, and emergency preparedness, and to enhance public awareness by helping residents better understand the natural and human-caused risks of wildfires that threaten lives, safety, and the local economy (Solano County 2023). The Project would not impair the County's ability to implement the CWPP.

Solano County Multi-Jurisdictional Hazard Mitigation Plan

The current Solano County MJHMP was adopted by the County Board of Supervisors in March 2022, and was approved by FEMA in July 2022. The purpose of the MJHMP, a requirement of FEMA, is to guide hazard mitigation planning to better protect the people and property of the county from the effects of hazard events. The MJHMP demonstrates the commitment of each participating jurisdiction to reducing risks from hazards and serves as a tool to help decision-makers direct mitigation activities and resources. The MJHMP was also developed to ensure Solano County and participating jurisdictions' continued eligibility for certain federal disaster assistance, specifically the FEMA Hazard Mitigation Assistance grants, including the Hazard Mitigation Grant Program, Building Resilient Infrastructure and Communities, and Flood Mitigation Assistance Program. The MJHMP is also important for maintaining and improving the standing of the county in the National Flood Insurance Program's Community Rating System, participation in which provides for lower flood insurance

premiums to residents (Solano County 2022). The Project would not impair the County's ability to implement the MJHMP.

City of Vacaville General Plan

The City of Vacaville's General Plan is the principal policy and planning document for guiding future conservation, enhancement, and development in the city. It represents the basic policy direction of the Vacaville City Council regarding community values, ideals, and aspirations to govern a shared environment through 2035. The City General Plan addresses all aspects of development including land use, transportation, housing, economic development, public facilities and infrastructure, and open spaces, among other topics (City of Vacaville 2015).

A portion of the Project's gen-tie line lies within the City of Vacaville and is covered by the City's General Plan. Additionally, this area is identified within the City's General Plan as the Northeast Growth Area, which is one of the City's long-range projects for urban development. No specific plan currently exists for this area, and the area is not anticipated to be fully developed by the City's General Plan horizon year of 2035 (City of Vacaville 2024). However, the City's General Plan establishes land use designations for new urban development within this area (City of Vacaville 2015). The City's General Plan includes the following goals, policies, and actions that are relevant to the gen-tie line, and specifically to wildfire. Refer also to Section 4.11, *Land Use and Planning*, of this application for additional information regarding land use consistency, and for a consistency analysis with applicable City General Plan goals, policies, and actions as related to wildfire.

Safety Element

Goal SAF-5: *Protect lives and property from wildland fire hazards.*

Policy SAF-P5.2: *Require that all development in areas of potential wildland fire hazards, including agricultural areas east of Leisure Town Road, include the following:*

- *Fire breaks adjoining open space areas.*
- *Adequate access to adjoining open space areas.*
- *Clearance around structures and energy infrastructure.*
- *Fire-resistant groundcover.*
- *Fire-resistant roofing materials.*
- *Adequate emergency water flow.*
- *Adequate road dimension 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: *Require all development applications to be reviewed and approved by the Fire Department prior to project approval.*

Public Facilities and Services Element

Goal PUB-1: *Provide adequate fire, rescue, and emergency medical services to serve existing and new development.*

Policy PUB-P1.4: *Identify and mitigate fire hazards during the project review and approval process.*

Policy PUB-P1.5: *Require that new development satisfy fire flow and hydrant requirements and other design requirements as established by the Fire Department.*

City of Vacaville Emergency Operations Plan

The City EOP addresses the City's planned response to extraordinary emergency situations associated with natural, technological, and human-caused emergencies or disasters within or affecting the City. The City EOP is the principal guide for the City response to, management of, and recovery from real or potential emergencies and disasters occurring within its designated geographic boundaries. Specifically, the City EOP is intended to facilitate multi-jurisdictional and interagency coordination in emergency situations; serve as an operational plan and reference document for emergency planning and emergency operations; interface with applicable local, state, and federal contingency plans; guide users through the emergency management phases; identify the components of an Emergency Management Organization and establish associated protocols required to effectively respond to, manage and recover from major emergencies and disasters; establish the operational concepts and procedures associated with the coordination of resources; and establish the organizational framework for implementation of the California Standardized Emergency Management System and the National Incident Management System within the City (City of Vacaville 2023). The Project would not impair the City's ability to implement the City EOP.

4.20.7 Agencies and Agency Contacts

Table 4.20-2. Agency Contacts for Wildfire

Agency	Contact	Permit/Issue
Dixon Fire Protection District	Bill Sbozil, Fire Marshal 205 Ford Way Dixon, CA 95620 (707) 678-7060	Fire Response

4.20.8 Required Permits and Permitting Schedule

No required permits related to wildfire have been identified.

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5.0 ALTERNATIVES

The California Environmental Quality Act (CEQA) requires consideration 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 but would avoid or substantially lessen any of the significant effects of the project, and evaluate the comparative merits of the alternatives" (14 California Code of Regulations [CCR] 15126.6(a)). As provided by the CEQA *Guidelines*, among the factors that may be used to eliminate alternatives from detailed consideration are an alternative's inability to meet basic project objectives, infeasibility of the alternative, or the alternative's inability to avoid significant environmental impacts (AEP 2024).

The Energy Facilities Siting Regulations (Title 20, CCR, Appendix B) also require a "discussion of the range of reasonable alternatives to the project, or to the location of the project, including the no project alternative, which would 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." In accordance with Public Resources Code section 25540.6(b), this section provides a discussion of the Applicant's site selection criteria, any alternative sites considered for the Corby Battery Energy Storage System Project (Project), and the reasons why the Applicant chose the proposed site.

To comply with these requirements, this section discusses and evaluates alternatives to the Applicant's proposed Project, including the "No Project" alternative, site alternatives, linear facility routing alternatives, and technology alternatives. The discussion focuses on those that could feasibly accomplish most of the Project's key objectives and would avoid or substantially lessen any of the significant effects of the Project. A comparative analysis of the various alternatives considered for the Project is described in Section 5.3, *Comparative Evaluation of Alternative Sites*, Section 5.4 *Alternative Linear Facility Routing*, and Section 5.5 *Technology Alternatives*.

As described in Section 1.1.2, *Key Objectives*, the purpose of the Project is to provide energy storage with a battery energy storage system (BESS) that will help meet the state's Renewable Portfolio Standard, greenhouse gas (GHG) reduction, and carbon neutrality goals. The Applicant has identified the following Project objectives:

- Construct and operate a 300-megawatt (MW) BESS close to Pacific Gas and Electric's (PG&E) Vaca-Dixon Substation in Solano County to meet contractual obligations and 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, Marine Clean Energy, and CleanPowerSF to ensure grid reliability for the region to connect renewable resources in Solano County to the local area.
- Develop a BESS that supports grid stability and helps prevent local and regional blackouts; and

- Develop a BESS that supports the efficient use of renewable energy and California's Renewable Portfolio Standard goals.

5.1 No Project Alternative

Under CEQA, the No Project alternative considers the merits of not constructing the Project; in this case, the No Project alternative is not developing a battery energy storage facility at the selected location. The existing environmental setting would be maintained; changes to the landscape, ground disturbance-related impacts, and other environmental impacts, such as noise, traffic, or air emissions, would not occur. Additionally, the environmental benefits of energy storage would not be realized from development of the Project site.

No feasibility issues were identified that would eliminate the No Project alternative; however, if the Project is not constructed, the Project objectives would not be met. Three-hundred MW of energy storage would not be available to support grid stability and help prevent local and regional blackouts, help support the efficient use of renewable energy in California, and provide additional energy during peak demand times. The No Project alternative could create the need for other electrical system upgrades including major transmission projects which could increase electricity bills for consumers, and could result in greater fuel consumption, increased air pollution, and other environmental impacts within the region and across the state from additional generation capacity being required to provide additional energy during peak times.

5.2 Site Alternatives[1]

Three parcels within the City of Vacaville and Solano County were evaluated based on minimum site requirements and additional screening criteria to assess site feasibility. Minimum site requirements included the following:

- **Parcel size:** A parcel must be at least 25 acres to allow design flexibility for a 300-MW Project that includes batteries, inverters, transformers, Project substation, stormwater control, and fencing.
- **Distance from the Vaca-Dixon Substation:** A parcel must be within 6.5 miles of the Vaca-Dixon Substation. However, a parcel that is located no more than 1 to 2 miles from the interconnection is most desirable considering the tradeoff of energy losses and economic costs associated with a longer generation tie (gen-tie) line length.

After consideration of the minimum site requirements above, additional screening criteria were established to assess site feasibility. These screening criteria relate to economic, environmental, legal, social, or technological factors that influence whether the Project could be accomplished in a successful manner within a reasonable period of time (i.e., within 12 to 24 months). The screening criteria used for the purpose of site selection included consideration of parcel zoning, general plan land use designations, the presence of critical habitat, conserved lands, Federal Emergency Management Agency (FEMA) flood zones, existing development and surrounding development, the parcel slope, and the feasibility of securing easements for a gen-tie as shown in Table 5-1.

[1] Appendix B (b) (1) (D), Appendix B (f) (1)

Table 5-1. Screening Criteria and Data Sources

Screening Criteria	Relevance to Site Feasibility	Data Source(s)
Zoning (City and County)	Zoning regulations are a legal consideration in the feasibility of a site, as they are laws that regulate the use of land and structures built upon it. Although neither the City of Vacaville nor Solano County specifically address battery energy storage systems, certain zoning types allow utility infrastructure with or without a use permit.	City of Vacaville. 2024a. City of Vacaville Zoning Maps. Available online at: https://www.cityofvacaville.gov/government/community-development/zoning/zoning-map (accessed October 15, 2024).
General Plan Land Use Designations (County)	California planning law requires that cities and counties include a land use element within their general plan, which designates the proposed general distribution and general location and extent of the uses of the land. Land use designations establish the overall land use patterns envisioned by the governing city or county. Compatibility with the general plan land use designation can be indicative of whether a project could be accomplished in a successful manner within a reasonable period of time.	City of Vacaville. 2024b. City of Vacaville General Plan Maps. Available online at: https://www.cityofvacaville.gov/government/community-development/general-plan/general-plan-map-4407 (accessed October 15, 2024). Solano County. 2008. Solano County General Plan Land Use Diagram. November 2008. Available online at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=11013 (accessed October 15, 2024).
Critical Habitat	Critical habitat is an environmental consideration in the feasibility of a site, as it is a formally designated geographic area that contains physical or biological features essential for the conservation of a threatened or endangered species and that may require special management and protection.	U.S. Fish and Wildlife Service. 2024a. USFWS Threatened & Endangered Species Active Critical Habitat Report. Available online at: https://ecos.fws.gov/ecp/report/table/critical-habitat.html (accessed October 15,2024).
Conserved Lands	Conserved lands are an environmental consideration in the feasibility of a site, as they are protected or managed for the preservation of open space or the conservation of biological or aquatic resources.	GreenInfo Network. 2024a. California Conservation Easement Database. June 2024. Available online at: https://data.cnra.ca.gov/dataset/california-conservation-easement-database (accessed October 17, 2024) GreenInfo Network. 2024b. California Protected Areas Database. June 2024. Available online at: https://data.cnra.ca.gov/dataset/california-protected-areas-database (accessed October 17, 2024)
Federal Emergency Management Agency Flood Zones	Floodplains are an environmental consideration in the feasibility of a site. Avoidance of special flood hazard areas would reduce risk of flooding events.	FEMA (Federal Emergency Management Agency). 2024. National Flood Hazard Layer. Available online at: https://www.http://www.fema.gov/flood-maps/national-flood-hazard-layer (accessed October 17, 2024).
Existing Development	Parcels with existing buildings and substantial infrastructure improvements would increase the cost of acquisition, which relates to the economic feasibility of a site.	ESRI (Environmental Systems Research Institute). 2024. ESRI World Imagery Map. ArcGIS. Accessed September 20, 2024.
Slope	Parcels with a steep slope would pose more substantial limitations to development and would increase the cost of site preparation, which relates to the engineering and economic feasibility of a site.	USGS (U.S. Geological Survey). 2024. The National Map - Advanced Viewer. Available online at: https://apps.nationalmap.gov/viewer/ (accessed October 17, 2024).

Screening Criteria	Relevance to Site Feasibility	Data Source(s)
Easements for Gen-tie Line	The number of parcels crossed by the gen-tie as it connects from the battery energy storage system to the substation influences the feasibility of a site with respect to the cost and complexity of acquiring easements and with respect to environmental considerations (e.g., a longer gen-tie or a gen-tie that crosses a large number of small parcels with residential uses would have greater construction air quality and noise impacts, aesthetics impacts).	Solano County. 2024. Solano County Parcel Viewer. Available online at: https://solanocountygis.com/portal/apps/webappviewer/index.html?id=b2a40316824143fc9f361d5d81c51a7a (accessed October 17, 2024).

Note: gen-tie – generation tie

5.2.1 Proposed Project Site

The Project site is situated on an approximately 40.3-acre parcel southeast of PG&E's Vaca-Dixon Substation in Solano County. Existing zoning for the Project site is compatible with utility facilities or infrastructure outside of a right-of-way; although the Solano County Code does not contain specific criteria for BESS facilities, the BESS facilities are considered to be utility facilities. As a result, the Project site meets the site requirements described in Section 5.2, *Site Alternatives.* The Project site is treeless and is located on a fallow agricultural field that is covered with annual grassland composed of typical non-native grassland species widely present throughout the region. The Project site has very little slope differential. There are no conserved lands, FEMA-mapped flood zones, potentially jurisdictional aquatic features, and no U.S. Fish and Wildlife Service (USFWS)-designated critical habitat. There is no existing development on the Project site; developed uses in the vicinity of the Project site include several rural residences, agricultural buildings, overhead electric transmission lines, and a Solano Irrigation District (SID) canal.

5.2.2 Site 1

Alternative Site 1 is located within the City of Vacaville on an approximately 164-acre parcel located approximately 3,000 feet northeast of the point of interconnection (POI) at Vaca-Dixon Substation (see Figure 5-1). Currently, this site is zoned AG (Agriculture) but it is located within the City of Vacaville Northeast Growth Area Overlay District and is designated as a Technology Park (TP) in the City of Vacaville General Plan (City of Vacaville 2024b). The purpose of this overlay district is to guide temporary or interim development in a manner that preserves existing land for future development in the Northeast Growth Area. Permitted uses include agriculture related uses, dwellings, wells and pump stations, roads, and landscaping. Conditional uses include employee housing, flood control channels and water supply channels, reservoirs and municipal storage tanks, interim storage yards for off-site construction activities, freeway billboards, and other temporary uses. As public works and utility facilities are not a permitted or conditionally approved use, a rezone of the portion of the parcel where the BESS would be located would be required to develop the site.

The site is currently an orchard with no buildings or agricultural facilities located on it. Site 1 has very little slope differential. There are no conserved lands, FEMA-mapped flood zones, potentially jurisdictional aquatic features, and no USFWS-designated critical habitat on the Project site. Easements would be required at a minimum of five additional parcels along the gen-tie to connect a BESS at this location with Vaca-Dixon Substation. However, based on prior discussions with PG&E, it is

anticipated that routing of the gen-tie from Site 1 would either need to go north and west of Vaca-Dixon Substation before traveling northeast along Quinn Road to the POI, or cross Interstate 80 (I-80) on the east side of Vaca-Dixon Substation, travel west along Weber Road, before crossing I-80 again into Vaca-Dixon Substation. This is because PG&E indicated during discussions that they 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.

It should be noted that the Applicant does not have Site 1 under site control, and there is no certainty that it could do so.

5.2.3 Site 2

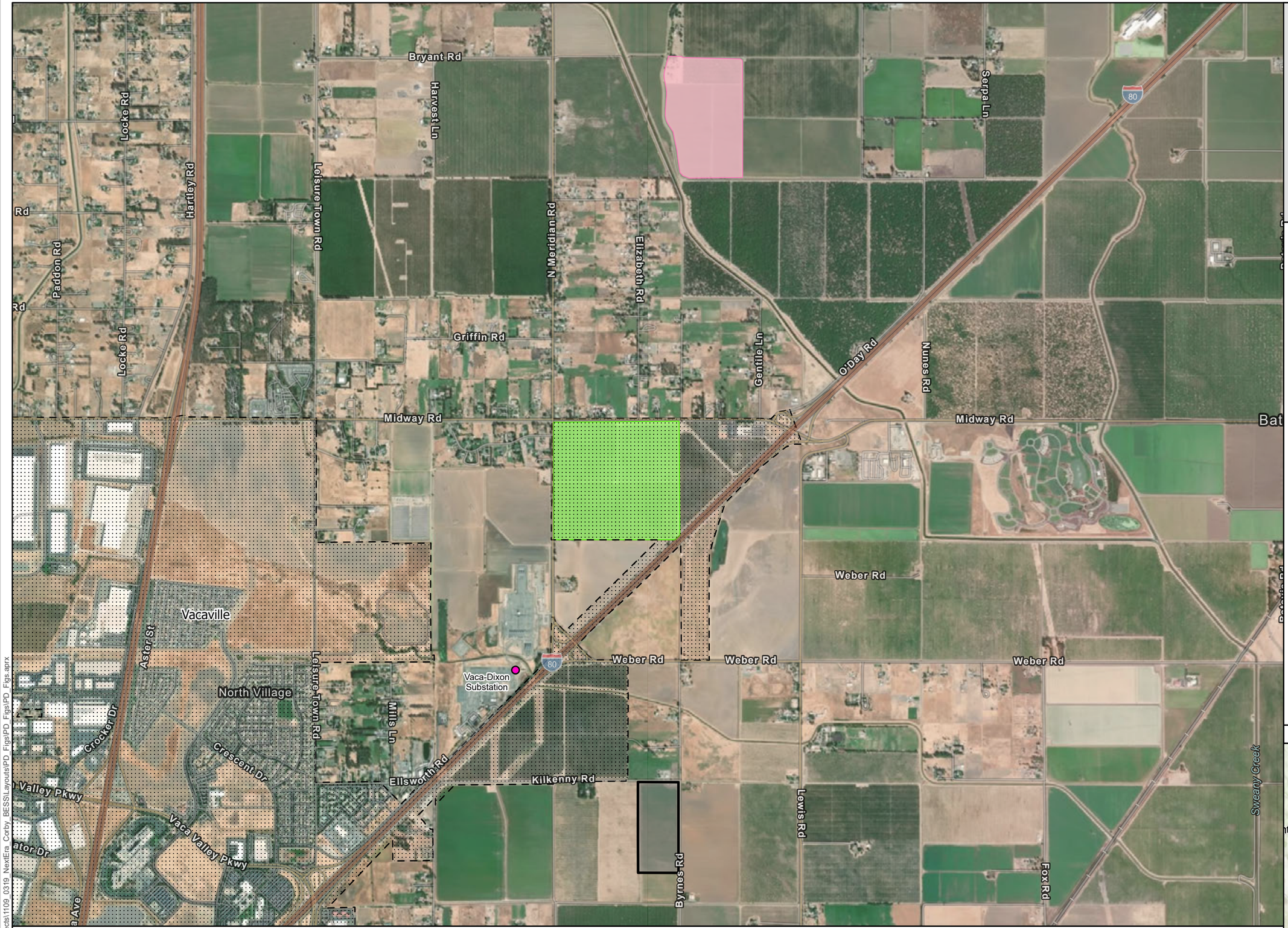
Alternative Site 2 is located in Solano County on an approximately 95-acre parcel northeast of the Project site and approximately 11,500 feet from the POI at Vaca-Dixon Substation. Similar to the Project site, existing zoning for Site 2 is compatible with public works and utilities, either as a permitted use or under a conditional use permit. The majority of Site 2 is treeless and is covered by row crops, while a smaller portion is an orchard. There are some agriculture related buildings on the northwestern side of the site. Site 2 has very little slope differential. There are no conserved lands, FEMA-mapped flood zones, potentially jurisdictional aquatic features, and no USFWS-designated critical habitat is present. This is the farthest of the site alternatives from the POI at Vaca-Dixon Substation, and a gen-tie route from Site 2 would pass either through or in proximity to Site 1. This would require a minimum of 13 additional easements to connect to Vaca-Dixon Substation. Similar to Site 1, based on prior discussions with PG&E, it is anticipated that routing of the gen-tie from Site 1 would need to go north and west of Vaca-Dixon Substation before traveling northeast along Quinn Road to the POI, or cross I-80 east of the Vaca-Dixon Substation, travel west along Weber Road, before crossing I-80 into Vaca-Dixon Substation.

It should be noted that the Applicant does not have Site 2 under site control, and there is no certainty that it could do so.

NextEra Energy Corby Battery Energy Storage System Project

Figure 5-1 Alternative Site Location

Solano County, CA



- Point of Interconnection
- City of Vacaville Boundary

Proposed Features

- Preferred Project Site

Alternative Sites

- Alternative Site 1
- Alternative Site 2

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:24,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

Z:\Projects\1109_0319_NextEra_Corby_BESS\Layouts\PD_Figs\PD_Figs.aprx

5.3 Comparative Evaluation of Alternative Sites[2]

The following sections provide a comparative analysis of the Project site and alternative sites in terms of Project development constraints and the environmental resource areas required in the Opt-in Application.

5.3.1 Project Development Constraints

As described in Sections 5.2.1, 5.2.2, and 5.2.3, all three sites evaluated meet the minimum parcel size requirements and maximum distance from Vaca-Dixon Substation. Existing conditions at Sites 1 and 2 present additional constraints, however, from those identified at the Project site.

Sites 1 and 2 are either completely or partially covered in orchards, while the Project site is an agricultural field. None of the sites have existing infrastructure on them that would require removal, and all have very little slope differential. Gen-tie routes for Site 1 and Site 2 would be longer than the route from the Project site due to intervening development and constraints in the vicinity of Vaca-Dixon Substation.

5.3.2 Environmental Analysis

The Project site and Sites 1 and 2 were comparatively analyzed according to the 20 environmental resource areas described in Section 4.0, *Environmental Information*. The No Project alternative is not included in this analysis because, as the current site conditions would remain the same under this alternative, no impacts would occur.

A comparison of potential environmental impacts identified for the Project and the No Project and Site 1 and Site 2 alternatives is provided in Table 5-2.

Table 5-2. Alternatives Impact Comparison

Resource Area	Project	No Project	Site 1	Site 2
Aesthetics	Less than significant	-	+	+
Agriculture and Forestry Resources	Less than significant	-	=	=
Air Quality	Less than significant	-	+	+
Biological Resources	Less than significant	-	=	=
Cultural Resources	Less than significant	-	=	=
Energy	Less than significant	-	+	+
Geology, Soils, and Paleontological Resources	Less than significant	-	=	=
Greenhouse Gas Emissions	Less than significant	-	+	+
Hazards and Hazardous Materials	Less than significant	-	=	=
Hydrology and Water Quality	Less than significant	-	=	=
Land Use and Planning	Less than significant	-	+	=
Mineral Resources	Less than significant	=	=	=
Noise	Less than significant	-	+	=
Population and Housing	Less than significant	=	=	=
Public Services	Less than significant	=	=	=

[2] Appendix B (f) (1), Appendix B (f) (2)

Resource Area	Project	No Project	Site 1	Site 2
Recreation	No impact	=	=	=
Transportation	Less than significant	-	=	=
Tribal Cultural Resources	Less than significant	-	=	=
Utilities and Service Systems	Less than significant	-	=	=
Wildfire	Less than significant	-	+	+

"-" = less than identified for the Project, "+" = greater than identified for the Project, "=" = similar to what is identified for the Project

5.3.2.1 Aesthetics

Under the Site 1 and Site 2 alternatives, visual elements of the Project would remain the same as the Project site with the exception of the gen-tie. Similar to the Project site, there are no scenic vistas, regional or local trails, or other scenic resources within the viewsheds for Sites 1 and 2, nor are these sites visible from local scenic roads or designated and eligible state scenic highways. Site 2 is located within a Solano County General Plan Agricultural Reserve Overlay, and this overlay was created to maintain scenic agricultural landscapes. Therefore, Site 2 would have greater aesthetic impacts than the Project site and Site 1. Due to existing slope and elevation differences, Project components would be more readily visible from greater distances at Site 1 than at the Project site and Site 2. The gen-tie for Sites 1 and 2 would be longer and run in closer proximity to rural residences than that originating at the Project site and therefore would have greater aesthetic impacts. As a result, potential aesthetic impacts for Sites 1 and 2 would be greater than those identified for the Project.

5.3.2.2 Agriculture and Forestry Resources

The Project site, Site 1, and Site 2 all have lands that are designated as Prime Farmland, Unique Farmland, and Farmland of Statewide Importance. As such, development of any of the sites will require conversion of these to a non-agricultural use. None of the sites are currently under Williamson Act contracts, and none include forest land. Because a similarly sized area would be required for construction and operation of the BESS at each of the sites, the conversion of farmland to non-agricultural use would be similar across them all. As a result, potential agriculture and forestry resource impacts for Site 1 and Site 2 would be similar to those identified for the Project.

5.3.2.3 Air Quality

Construction and operation of the Project will generate air contaminant emissions, including reactive organic gas, nitrogen oxides, particulate matter with a diameter between 2.5 and 10 micrometers, fine particulate matter with a diameter less than 2.5 micrometers, carbon monoxide, sulfur dioxide, and GHGs. The Project will also result in toxic air contaminant emissions, such as diesel particulate matter, and minor odors. Air pollutant emissions associated with the Project will occur over the short term from construction-related activities, including equipment exhaust, vehicle travel on paved and unpaved roads, and fugitive dust from soil disturbance activities. Because the same equipment will be installed regardless of the site location, operational air quality impacts would be similar for Sites 1 and 2 as those identified for the Project. Due to the potential removal of orchards at Sites 1 and 2, additional ground disturbance would be required relative to the Project site. Sites 1 and 2 would also require longer gen-tie lines, which would result in a longer construction schedule and increased use of construction machinery. These gen-tie lines would also likely be routed through orchards for a similar

distance as the gen-tie line for the Project site. For Sites 1 and 2, this would result in the increased generation of air contaminant emissions associated with the operation of construction machinery due to the additional length of time required to prepare the site for construction and greater length of the gen-tie line.

5.3.2.4 Biological Resources

Special status species that are recorded or have the potential to occur in the region would generally be the same for both sites given the similarity of their characteristics and relative proximity to one another. Temporary impacts to biological resources associated with construction of the Project are expected to be less than significant and further reduced through the incorporation of the Project Design Measures described in Section 4.4.5, *Mitigation Measures*. The Project site and proposed gen-tie line construction will result in the net gain of foraging habitat for Swainson's hawk (*Buteo swainsonii*) associated with the removal of orchards for routing of the gen-tie line. Site 1 and potentially Site 2, depending on the Project footprint, would convert orchards to developed areas associated with the BESS and onsite substation. Depending on the routing of the gen-tie line, there may be conversion of orchards to Swainson's hawk foraging habitat. These potential impacts would be less than significant with incorporation of the Project Design Measures described in Section 4.4.5, *Mitigation Measures*. These temporary and permanent impacts would be similar at Sites 1 and 2 to those identified for the Project site.

5.3.2.5 Cultural Resources

No cultural, archaeological, or architectural resources were identified at the Project site. Due to the necessary ground disturbance required by the Project, the potential exists for construction activities to inadvertently discover these resources. Potential impacts to cultural resources would be further reduced through the incorporation of the Project Design Measures described in Section 4.5.5, *Mitigation Measures*. Because the construction footprint would be similar in size at the Project site and at Sites 1 and 2, the potential for impacts to cultural resources at these locations are anticipated to be similar.

5.3.2.6 Energy

Project construction would require the use of diesel-powered equipment; however, during operation fuel consumption is anticipated to be very low as the Project facility will be unstaffed. Limited vehicle operations would be required for operations and maintenance activities. Because Sites 1 and 2 would require longer gen-tie lines than the Project site, installation would require additional equipment time to install the lines. Operations and maintenance activities and any associated impacts for Sites 1 and 2 would similarly be higher than the Project site due to the longer gen-tie lines. Energy consumption by the BESS facility would be similar regardless of location, but round-trip energy losses would be higher for Sites 1 and 2 due to increased gen-tie line lengths and resulting increased transmission-related energy losses.

5.3.2.7 Geology, Soils, and Paleontological Resources

There are no significant differences in the geology or soils present at any of the sites. Thus, there is no significant difference in the potential effects of the proposed Project site and Sites 1 and 2 on these resources.

5.3.2.8 Greenhouse Gas Emissions

The Project's major source of GHGs will be the combustion of fuel in off-road construction equipment, in vehicles used to haul equipment and materials, and in vehicles used by workers commuting to and from the site. GHG emissions during operations and maintenance would result from vehicles traveling to the site. GHG emissions are also associated with fugitive emissions of refrigerant leaks and sulfur hexafluoride from gas-insulated switchgear equipment, such as the high-voltage circuit breakers within the Project substation. GHG emissions would be higher for Sites 1 and 2 than those identified for the Project site because additional construction equipment operation would be required for the longer gen-tie lines originating at Sites 1 and 2. Operational GHG emissions would be similar, as the same equipment would be installed at any site.

5.3.2.9 Hazards and Hazardous Materials

There would be no significant difference between the Project site and Sites 1 and 2 regarding the use of hazardous materials or the hazards posed by construction and operation activities. Thus, there is no significant difference in the potential effects of the proposed Project site and Sites 1 and 2 regarding hazards and hazardous materials.

5.3.2.10 Hydrology and Water Quality

There are no identified hydrological features located within the Project site or within Sites 1 or 2 (USFWS 2024b; EcoAtlas 2024). Immediately north of the Project site is an SID canal, and immediately east of Site 2 is Sweany Creek. However, these sites and Site 1 are relatively flat, with little potential for any concentrated runoff to occur. Construction will involve the use of bulldozers, graders, semi-trucks, and various other types of heavy equipment for vegetation removal, grubbing, grading, and installation of roads and other facilities. These construction activities will involve minor changes to onsite topography at the Project site and Sites 1 and 2. Regardless of the site, a Stormwater Pollution Prevention Plan would be required and site-specific best management practices would be installed to minimize erosion and reduce or prevent erosive conditions during stormwater runoff. As previously noted, there are no mapped FEMA flood zones at any of the sites. As a result, any potential impacts at Sites 1 and 2 would be similar to those identified for the Project site.

5.3.2.11 Land Use and Planning

The Project site and Site 2 are located within Solano County while Site 1 is located in the City of Vacaville within the Northeast Growth Area Overlay District. The purpose of this overlay district is to guide temporary or interim development in a manner that preserves existing land for future development. Permitted uses within this overlay zone include agricultural uses, dwellings, roads, and landscaping, and conditional uses include housing, water channels, reservoirs, and interim storage yards for off-site construction activities. To develop a BESS at this location would require a rezone from the City of Vacaville, but this rezone request was denied by the City (City of Vacaville 2022). Sites

1 and 2 are both within the County and have the same zoning (A-40). This zoning allows for utility facilities and similar facilities with a conditional use permit. Therefore, there would be no significant difference between the Project site and Site 2 in terms of land use and planning, but current zoning at Site 1 restricts development of a BESS at that site .

5.3.2.12 Mineral Resources

There are several mineral resource locations and mining activities that occur within relatively proximity to the Vaca-Dixon Substation, Project site, and Sites 1 and 2, but no known resources overlap with these locations. Therefore, any potential impacts to mineral resources are anticipated to be similar between the Project site and Sites 1 and 2.

5.3.2.13 Noise

The Project site and Sites 1 and 2 are located in a rural residential area with active farms and sparsely distributed homes. In the vicinity of the Project site, baseline sound level measurements and noise modeling indicate that less than significant noise impacts may occur during construction and operation of the Project, including an increase in ambient sound during Project operations. However, noise associated impacts would be greater at Site 1 than the other sites due to an increased number and closer proximity to residences.

5.3.2.14 Population and Housing

There would be no significant difference between the Project site and Sites 1 and 2 regarding workforce requirements or effects on population and housing as all of the sites would be the same size and are anticipated to require the same workforce to construct and operate. Thus, impacts to population and housing would be similar for the Project site and Sites 1 and 2.

5.3.2.15 Public Services

There would be no significant difference between the Project site and Sites 1 and 2 regarding public services or facilities, as the sites would all be the same size and have less than significant impacts regarding fire and police protection. Thus, any potential public services impacts would be similar between the proposed Project site and Sites 1 and 2.

5.3.2.16 Recreation

There would be no significant difference between the Project site and Sites 1 and 2 regarding recreation facilities or their use, and no impacts were identified for the Project. Thus, no impacts to recreation would occur for either the Project site or Sites 1 or 2.

5.3.2.17 Transportation

Access to the Project site and Sites 1 and 2 would require the use of the same or similar public roads, and transportation needs between the sites would be similar. Thus, any potential transportation impacts would be similar between the Project site and Sites 1 and 2.

5.3.2.18 Tribal Cultural Resources

No tribal cultural resources were identified at the Project site. Due to the necessary ground disturbance required by the Project, the potential exists for construction activities to inadvertently

discover these resources. With the incorporation of the Project Design Measures described in Section 4.5.5, *Mitigation Measures,* any potential impacts would be further reduced below the already less than significant level for the Project. Because the construction footprint would be similar in size at the Project Site and Sites 1 and 2, the potential for impacts to tribal cultural resources at these locations would be similar to that identified for the Project site.

5.3.2.19 Utilities and Service Systems

There would be no significant difference between the Project site and Sites 1 and 2 regarding the generation of waste or use of utilities and service systems by construction and operation activities. Thus, any utilities and system services impacts would be similar between the Project site and Sites 1 and 2.

5.3.2.20 Wildfire

Construction methods and operational risks for fire ignition would be similar at the Project site and Sites 1 and 2. Both Alternative Sites 1 and 2 are located in the Local Responsibility Area, similar to the proposed Project site, and are not located in or near lands classified as High or Very High fire hazard severity zones. The potential for wildfire to occur at Sites 1 and 2 is similar to that identified for the Project site. However, as Sites 1 and 2 would require longer gen-tie lines, these alternatives would slightly increase the risk for wildfire because of the construction of more electrical infrastructure than the proposed Project. Regardless, the gen-tie line would not result in wildfire impacts under the Project or either alternative as the potential fire risk is low for these components and vegetation management will occur along the gen-tie corridor and around the associated transmission towers in accordance with the 2022 California Fire Code and California Public Resources Code requirements.

5.3.3 Preferred Site Alternative

Although construction of the Project will require a similar footprint regardless of the site chosen, based on existing conditions and location, Sites 1 and 2 present additional potential environmental impacts associated with the longer gen-tie line and increased earth-moving work associated with removal of existing orchards. Additionally, Site 1 would require rezoning by the City of Vacaville. This would result in increased impacts associated with aesthetics, energy, GHG, land use and planning, noise, and wildfire impacts. The gen-tie lines from Sites 1 and 2 would also require the encumbrance of additional landowners. No potential impacts would be reduced at Sites 1 and 2 relative to the Project site. Because of these additional potential impacts, the proposed Project site is the preferred site alternative for the Project.

5.4 Alternative Linear Facility Routing[3]

In addition to site alternatives, four additional gen-tie line routes were considered for the Project (see Figure 5-2). These routes were evaluated according to several criteria, including minimizing gen-tie length, avoiding or minimizing crossing conflicts with other existing overhead electric transmission lines, highway crossings including onramps and offramps, and minimizing the number of additional parcels encumbered by the gen-tie line.

[3] Appendix B (f) (1)

NextEra Energy Corby Battery Energy Storage System Project

Figure 5-2 Alternative Linear Facility Routing

Solano County, CA



City of Vacaville Boundary

Proposed Features

Preferred Gen-tie Route

Alternative Routes

Central Overhead Gen-tie Route

Eastern Overhead City of Vacaville Gen-Tie Route

Eastern Overhead County Gen-tie Route

Western Gen-tie Route

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



1:8,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

Z:\Projects\1109_0319_NextEra_Corby_BESS\Layouts\PD_Figs\PD_Figs\PD_Figs.aprx

The vicinity of the Project site south of Vaca-Dixon Substation is currently encumbered by four overhead transmission lines, as shown in Figure 3-1, which all connect into Vaca-Dixon Substation:

- One 500-kilovolt (kV) transmission line located west of the Project site that runs north-south;
- Two 230-kV transmission lines running north-south in a similar alignment as the previously mentioned 500-kV line; and
- One 60-kV transmission line, which runs roughly east-west along Weber Road north of the Project site.

Thirteen additional overhead transmission lines interconnect to Vaca-Dixon Substation from the east and north, further limiting potential gen-tie line placement and POI (Figure 3-1).

A comparison of the alternative routes against the preferred route alternative is provided in Table 5-3. Where the alternative route presents an advantage over the Project, a "+" is shown in the table; similarly, where the alternative route presents a disadvantage over the Project, a "-" is shown. A "=" is included where the alternative route presents no apparent advantage or disadvantage when compared to the Project.

Table 5-3. Alternative Routing Comparison Against Preferred Route Alternative

Evaluation Factor Against Preferred Route Alternative	Western Gen-tie Route	Central Overhead Gen-tie Route	Eastern Overhead City of Vacaville Gen-tie Route	Eastern Overhead County Gen-tie Route
Total length	-	=	=	-
Takes into account landowner preferences	-	-	-	-
Number of non-Applicant and non-PG&E owned parcels encumbered	-	=	=	-
Parallel existing transmission lines	-	=	-	-
Number of transmission line crossings	-	=	=	-

5.4.1 Western Gen-Tie Route

An overhead and underground route option within the City of Vacaville south of I-80 that parallels Kilkenny Road was evaluated. This option would parallel the Preferred Route Alternative along Kilkenny Road, but would continue farther west, crossing the 500-kV and two 230-kV transmission lines at 90 degree angles before crossing I-80 southwest of Vaca-Dixon Substation. The line would then run northeast either within Quinn Road or overhead adjacent to it, crossing the same 500-kV and 230-kV lines before interconnecting at Vaca-Dixon Substation. Seven parcels not owned by either the Applicant or PG&E would be encumbered by this option. Approximate route length would be 1.4 miles, and this route would not parallel any of the existing transmission lines and would instead create a new corridor toward Vaca-Dixon Substation.

5.4.2 Central Overhead Gen-Tie Route

An overhead-only option that follows a similar alignment as the Preferred Linear Facility Route was evaluated. This route would exit the Project substation and travel west-northwest across Kilkenny Road before paralleling Kilkenny Road on the north side of the SID canal. After the canal crosses under Kilkenny Road, the route would turn north and parallel the 500-kV transmission line within an

Applicant-owned parcel, cross over I-80, and interconnect at Vaca-Dixon Substation. Two parcels not owned by either the Applicant or PG&E would be encumbered by this option, none of which have residences on them. Approximate route length would be 1.1 miles.

5.4.3 Eastern Overhead City of Vacaville Gen-Tie Route

An overhead-only option within the City of Vacaville south of I-80 was evaluated. This option exits the Project Substation to the north within the City of Vacaville until Weber Road where it would parallel the existing 60-kV transmission line and Weber Road before crossing over the eastbound I-80 Weber Road and Meridian Road offramp and the westbound North Meridian Road onramp before interconnecting at Vaca-Dixon Substation. Two parcels not owned by either the Applicant or PG&E would be encumbered by this option. Approximate route length would be 1.1 miles.

The property owner for the parcel south of Weber Road where the gen-tie line would be located requested that the line be routed on the western perimeter of the parcel as they had plans to keep the eastern portions of the parcel available for future development. This route has the gen-tie line located on the eastern perimeter of the parcel.

5.4.4 Eastern Overhead County Gen-Tie Route

An overhead-only option was evaluated that would exit the Project substation and travel north within Solano County in a similar initial 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 run south along North Meridian Road, crossing a 500-kV transmission line and the 60-kV transmission line again before interconnecting at Vaca-Dixon Substation. Eight parcels not owned by either the Applicant or PG&E would be encumbered by this option, and five of those parcels have residences in proximity to the route. Approximate route length would be 1.4 miles, and this route would not parallel any of the existing transmission lines and would instead create a new corridor to Vaca-Dixon Substation.

Discussions were held with PG&E with regard to routing, and PG&E indicated that North Meridian Road was too constrained to route an additional transmission line along, and they would not allow a transmission line to cross the gas regulation station located at the south end of North Meridian Road and in between Vaca-Dixon Substation and the I-80 southbound onramp. This makes this route infeasible due to these constraints.

5.4.5 Preferred Route Alternative

The preferred route alternative is an overhead and underground route that was evaluated and is based on feedback from encumbered property owners. The route would follow a similar alignment as the Central Overhead Gen-tie Route, but it would be located underground for a portion of the route along Kilkenny Road. This portion of the route has two underground route options. Underground Route Option 1 would be located on the north side of Kilkenny Road and the SID canal, and would be installed in an underground duct bank as the property owner did not want an overhead line routed through this portion of his property. Underground Route Option 2 would be installed via a horizontal directional drill within the Kilkenny Road right-of-way. Both underground route options would transition overhead within an Applicant-owned parcel before continuing north and paralleling the existing 500-kV transmission line. The original property owner of this parcel and adjacent parcels

requested that the gen-tie line should be located in this alignment instead of an alignment on the east side of his property due to their plan for future development. At the north end of the Applicant-owned parcel, the route crosses over I-80 and interconnects at Vaca-Dixon Substation. Two parcels not owned by either the Applicant or PG&E would be encumbered by this option, neither of which have residences on them, and routing has taken into account landowner feedback. Approximate route length would be 1.1 miles.

This route is the preferred gen-tie route for the Project as it takes into account landowner feedback and preferences, minimizes route length and number of parcels encumbered, parallels a portion of an existing transmission corridor, minimizes route length, minimizes existing transmission line crossings, and avoids areas that PG&E indicated would not be suitable for routing of a new transmission line.

5.5 Technology Alternatives[4]

In addition to site alternatives, several technology alternatives for energy storage were also considered for the Project. The Project includes the use of lithium-ion batteries to store and release energy as needed; the following subsections described other energy storage technologies and compares each technology to the Project. Table 5-4 evaluates these technologies against the Project based on a number of factors, including:

- **Energy Density:** Would the technology require a greater, smaller, or similar footprint to the Project?
- **Efficiency**: Would the technology be more, less, or similarly efficient when compared to the Project?
- **Response Time:** Would the technology respond more or less quickly than (or similarly to) the Project when electricity is needed?
- **Storage Duration:** Would the technology have improved storage duration over the Project?
- **Cost:** Would the technology be more, less, or similarly cost effective when compared to the Project?
- **Potential Environmental Impacts:** Would the technology's potential environmental impacts be greater, less than, or similar to the Project?

Where the technology presents an advantage over the Project, a "+" is shown in the table; similarly, where the technology presents a disadvantage over the Project a "-" is shown. A "=" is included where the technology presents no apparent advantage or disadvantage when compared to the Project.

[4] Appendix B (f) (1)

Table 5-4. Technology Alternative Comparison

Evaluation Factor	CAES	Thermal Energy	Supercapacitors	Hydrogen
Energy Density	-	-	=	-
Efficiency	-	-	-	-
Response Time	-	-	+	-
Storage Duration	+	+	-	+
Cost	-	-	-	-
Potential Environmental Impacts	+	+	=	-

CAES – compressed air energy storage

5.5.1 Compressed Air Energy Storage

Compressed air energy storage (CAES) is a technology that stores energy in the form of compressed air using an air compressor, storage vessel, and power generator. As excess energy is generated, this energy is used to compress and store air at high pressure. When the energy is returned to the grid, the stored compressed air is released and expanded through a turbine, which drives a generator to produce electricity. Additional energy in the form of heat is typically used during the expansion process. CAES systems are able to store large amounts of energy for extended periods beyond the capabilities of battery storage but require suitable geologic conditions for air storage (PNNL 2023; University of Calgary 2018).

Unlike battery storage systems, CAES requires additional energy in the form of heat to efficiently use compressed air to drive a turbine and generate electricity back to the grid. CAES also requires a larger physical space for all necessary equipment and storage. Because the underlying geologic strata are not favorable for this storage type in the vicinity of Vaca-Dixon Substation and the required facility footprint would be substantially larger than the Project to meet the 300-MW objective, CAES technology was not further considered as a feasible Project alternative.

5.5.2 Thermal Energy Storage

Thermal energy storage involves capturing and releasing heat energy to generate electricity and uses molten salts, phase-change materials (i.e., substances that absorb and release heat energy when they change phase), rock, or water to capture and store energy. These materials absorb and store heat energy as their temperatures increase and return stored energy as they cool. Similar to CAES, thermal energy storage systems are able to store large amounts of energy for extended periods beyond the capabilities of battery storage. Due to the nature of heat dissipation, however, thermal energy storage systems can experience energy losses, which reduce their overall efficiency. Thermal energy storage systems also have slower response times as heat energy needs to be transferred to a working medium and converted into electricity (Ho and Ambrosini 2020; POWER Magazine 2017; Renewable Thermal Collaborative 2023).

Because lithium-ion batteries have higher energy density, the Project footprint is smaller than what would be required for a thermal energy storage system. Additionally, batteries have higher energy efficiency and shorter response times to provide improved grid reliability during peak use times. Thermal energy storage would also require a heat source, but no suitable sources are located within

the vicinity of Vaca-Dixon Substation. As a result, a substantially longer gen-tie line would be required to interconnect a thermal energy storage system to Vaca-Dixon Substation.

5.5.3 Supercapacitors

Supercapacitors include a range of devices that store and release electrical energy by electrostatically adsorbing ions on the surface of electrodes. Based on their design, supercapacitors have a greater ability to rapidly store and release electrical energy and generally have a longer life cycle compared to batteries. Supercapacitors have a lower energy density than batteries, however, and lower energy efficiency due to higher self-discharge rates and other losses that make then less suitable for long-term energy storage (Castro-Gutierrez et al. 2020; Mughees 2021). As a result, this technology is best suited to applications where frequent charge-discharge cycles or rapid energy delivery is required.

5.5.4 Hydrogen Storage

Hydrogen energy storage converts surplus electricity into hydrogen through electrolysis, where water is split into hydrogen and oxygen. Generated hydrogen gas is compressed and stored in tanks or underground storage facilities at high pressure or in a liquified form depending on the storage method; when energy is needed, hydrogen is recombined with oxygen to produce electricity (and water as a byproduct). These systems are able to store large amounts of energy for extended periods beyond the capabilities of battery storage, although the process of electrolysis and later conversion of hydrogen back into electricity results in energy losses and lowers overall efficiency compared to battery storage systems. Hydrogen storage systems also have slower charging and response times due to the conversion processes required, which make them less suitable for peak demand response than battery energy systems. Hydrogen storage also presents challenges and safety risks associated with production, storage, and distribution due to its low density and high reactivity (FCHEA 2023; Headley and Schoenung 2020; OEERE 2023).

5.5.5 Preferred Technology Alternative[5]

When compared to four potential commercial-ready, utility-scale technology alternatives, battery storage technology presents greater potential energy density, efficiency, and cost feasibility. While three alternatives—CAES, thermal energy, and hydrogen—provide longer storage duration opportunities, each of these alternative technologies demonstrates longer response times. Because the objectives of the Project are to provide reliable, highly responsive supplemental energy during peak demand periods, technologies with shorter response times are more effective at meeting the objectives. One technology, supercapacitors, provides better response time than battery storage, but is less efficient and more costly. CAES and thermal energy present potentially fewer overall environmental impacts, although the additional footprint needed to accommodate the additional equipment may reduce this advantage depending on the final overall size of the facility. Because battery energy storage is the most commercially advanced, provides optimal energy density, efficiency, and responsiveness to peak demand requirements, and is less costly than the other technology alternatives evaluated, it is the preferred technology for the Project.

[5] Appendix B (f) (2)

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