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Document Title:	Corby BESS Opt-in Application Volume 1 Part 1
Description:	N/A
Filer:	Doug Urry
Organization:	Tetra Tech
Submitter Role:	Applicant Consultant
Submission Date:	11/4/2024 9:40:06 AM
Docketed Date:	11/4/2024

November 1, 2024

Mr. Drew Bohan
Executive Director
California Energy Commission
1516 9th Street
Sacramento, CA 95814-5512

Dear Mr. Bohan:

In accordance with the provisions of Title 20, California Code of Regulations and Assembly Bill 205, North Bay Interconnect, LLC and Corby Energy Storage, LLC (Applicant)[1] hereby submits this Opt-In Application, seeking authority to construct, own, and operate the Corby Battery Energy Storage System Project, a 300-megawatt, 1,200-megawatt-hour battery energy storage system. The project will be located in unincorporated Solano County, California. As an officer of both North Bay Interconnect, LLC and Corby Energy Storage, LLC, I hereby attest, under penalty of perjury, that the contents of this application are truthful and accurate to the best of my knowledge.

Sincerely,

North Bay Interconnect, LLC

DocuSigned by:
Christine Seal
3215140...

Christine Seal

Assistant Vice President

Corby Energy Storage, LLC

DocuSigned by:
Christine Seal
3215140...

Christine Seal

Assistant Vice President

[1] North Bay Interconnect, LLC and Corby Energy Storage, LLC are both wholly-owned subsidiaries of NextEra Energy Resources. North Bay Interconnect, LLC will own and operate the interconnection facilities for the Project; and Corby Energy Storage, LLC will own and operate the BESS components of the Project.

Opt-in Application

Corby Battery Energy Storage System Project

Prepared for

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Acronyms and Abbreviations

§	section
°F	degree Fahrenheit
µPa	microPascal
3D	three-dimensional
A	ampere
A-20	Exclusive Agriculture (20 acres)
A-40	Exclusive Agriculture (40 acres)
AADT	average annual daily traffic
AB	Assembly Bill
ABAG	Association of Bay Area Governments
AC	alternating current
ACSS	aluminum core, steel supported
ADT	average daily traffic
AERMOD	American Meteorological Society/Environmental Protection Agency Regulatory Model
AF	acre-feet
AFB	Air Force Base
AFY	acre-feet per year
AG	Agricultural (zone)
AIA	airport influence area
ALUC	Airport Land Use Commission
ALUC	Airport Land Use Commission
ANSI	American National Standards Institute
APN	Assessor's Parcel Number
Applicant	North Bay Interconnect, LLC and Corby Energy Storage, LLC
APWRA	Altamont Pass Wind Resource Area
AR4	Fourth Assessment Report
AR5	Fifth Assessment Report
AR6	Sixth Assessment Report
ASCE	American Society of Civil Engineers
Basin Plan	Water Quality Control Plan
BCDC	San Francisco Bay Conservation and Development Commission
B-E	Combining B District
BEA	Bureau of Economic Analysis
BESS	battery energy storage system
BGEPA	Bald and Golden Eagle Protection Act
BLM	U.S. Bureau of Land Management
BMP	best management practice
BMS	Battery Management System
BOL	beginning of life

BP	Business Park
BPA	Bonneville Power Administration
BSA	biological study area
Btu	British thermal unit
CAA	Clean Air Act
CAAQS	California Ambient Air Quality Standards
CadnaA	Computer Aided Noise Abatement
CAES	compressed air energy storage
CAISO	California Independent System Operator
cal AD	calibrated years Anno Domini
cal BP	calibrated years Before Present
CalEPA	California Environmental Protection Agency
CAL FIRE	California Department of Forestry and Fire Prevention
CalEEMod	California Emissions Estimator Model
CalGEM	California Geologic Energy Management
Cal-OSHA	California Occupational Safety and Health Administration
Caltrans	California Department of Transportation
CAP	Climate Action Plan
CAPCOA	California Air Pollution Control Officers Association
CARB	California Air Resources Board
CATL	Contemporary Amperex Technology Company
CBC	California Building Code
CBO	Chief Building Official
CCA	Community Choice Aggregation
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFW	California Department of Fish and Wildlife
CEC	California Energy Commission
CEQA	California Environmental Quality Act
CFC	California Fire Code
CFC	chlorofluorocarbon
CFR	Code of Federal Regulations
CGS	California Geological Survey
CH_4	methane
CHP	California Highway Patrol
CHRIS	California Historical Resources Information System
City EOP	City of Vacaville Emergency Operations Plan
City General Plan	City of Vacaville General Plan
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO	carbon monoxide
CO_2	carbon dioxide

CO_2e	carbon dioxide equivalent
Construction General Permit	General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities
County EOP	Solano County Emergency Operations Plan
County	Solano County
CPM	Compliance Project Manager
CPUC	California Public Utilities Commission
CRHR	California Register of Historical Resources
CRM	cultural resource monitor
CRPR	California Rare Plant Rank
CRS	Cultural Resources Specialist
CWA	Clean Water Act
CWM	Chemical Waste Management, Inc., Kettleman Hills Facility
CWPP	Community Wildfire Protection Plan
dB	decibels
dBA	A-weighted decibel
DFPD	Dixon Fire Protection District
DMV	Department of Motor Vehicles
DOC	Department of Conservation
DOF	California Department of Finance
DOT	U.S. Department of Transportation
DPM	diesel particulate matter
DTSC	Department of Toxic Substances Control
DUSD	Dixon Unified School District
DWR	California Department of Water Resources
EHV	Extra High Voltage
EJScreen	Environmental Justice Screening Tool
EMF	electromagnetic field
Endangerment Finding	Proposed Endangerment and Cause or Contribute Findings for Greenhouse Gases under the CAA
EOL	end of life
EOP	Emergency Operations Plan
ERP	emergency response plan
ESA	Endangered Species Act
ESJ	environmental and social justice
ESS	Energy Storage System
FAA	Federal Aviation Administration
FEMA	Federal emergency Management Agency
FHSZ	Fire Hazard Severity Zone
FHWA	Federal Highway Administration
FMMP	Farmland Mapping and Monitoring Program
FPDC	Fleet Performance and Diagnostics Center

FR	*Federal Register*
FTA	Federal Transit Administration
FTE	full-time equivalent
General Plan	Solano County General Plan
gen-tie	generation tie
GHG	greenhouse gas
GIE	gas-insulated equipment
GO	General Order
gpm	gallon per minute
GPS	global positioning system
GSP	Groundwater Sustainability Plan
GWh	gigawatt-hour
GWP	global warming potential
HCM	Highway Capacity Manual
HDD	horizontal direction drill
HFC	hydrofluorocarbon
HFTD	High Fire Threat District
HIC	chronic hazard index
HMA	hazard mitigation analysis
HMBP	Hazardous Materials Business Plan
HRA	health risk assessment
HSP	Health and Safety Plan
HU	hydrologic unit
HVAC	heating, ventilation, and air conditioning
HWFP	Hazardous Waste Facility Permit
Hz	hertz
I	Interstate
ICF	ICF International Inc.
IFC	International Fire Code
IOU	Investor-owned utilities
IPCC	Intergovernmental Panel on Climate Change
IR	Interconnection Request
IRA	Inflation Reduction Act
IRP	Integrated Resource Plan
ISO	International Organization for Standardization
ITP	Incidental Take Permit
Jacobs	Jacobs Engineering Group, Inc.
kcmil	thousand circular mils
KOP	Key Observation Point
kV	kilovolt
kVA	kilovolt-ampere
kW	kilowatt

lb/ft^2	pound per square foot
L_{dn}	average day-night sound level
L_{eq}	equivalent sound level
LESA	Land Evaluation and Site Assessment
LORS	laws, ordinances, regulations, and standards
LOS	Level of Service
L_P	sound pressure level
LPA	Large Parcel Agriculture
LRA	Local Responsibility Area
LT	long term
LUCP	Land Use Compatibility Plan
LUST	leaking underground storage tank
L_W	sound power level
MBTA	Migratory Bird Treaty Act
MEIR	maximum exposed individual resident
MEIW	maximum exposed individual worker
MJHMP	Multi-Jurisdictional Hazard Mitigation Plan
MLRA	Major Land Resource Area
mm	millimeter
mph	miles per hour
MRDS	Mineral Resources Data System
MRZ	Mineral Resource Zone
MRZ-1	MRZ category 1
MT	metric ton
MTC	Metropolitan Transportation Commission
MVA	megavolt ampere
MVAr	megavolt ampere reactive
MW	megawatt
MWh	megawatt-hour
N_2O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NAIP	National Agriculture Imagery Program
NERC	North American Electric Reliability Corporation
NextEra ES	NextEra Energy Environmental Services
NFPA	National Fire Protection Agency
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWCG	National Wildfire Coordinating Group

NWIC	Northwest Information Center
O&M	operation and maintenance
O_3	ozone
OEHHA	Office of Environmental Health Hazard Assessment
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PD	Project Design
PFC	perfluorocarbon
PFYC	Potential Fossil Yield Classification
PG&E	Pacific Gas and Electric
PG&E	Pacific Gas and Electric
PLA	project labor agreement
PM	particulate matter
PM_{10}	coarse particulate matter 10 micrometers in diameter
$PM_{2.5}$	fine particulate matter 2.5 micrometers in diameter
PMI	point of maximum impact
POCO	point of change in ownership
POI	point of interconnect
PPE	personal protective equipment
PPV	Peak-Particle-Velocity
PQP	Public Quasi-Public
PRC	Public Resources Code
PRMMP	Paleontological Resources Mitigation and Monitoring Plan
Project	Corby Battery Energy Storage System Project
PRS	Paleontological Resource Specialist
PVR	potential vertical rise
QC	Queue Cluster
RCRA	Resource Conservation and Recovery Act
REC	recognized environmental condition
REL	reference exposure level
RH	Residential High Density
RIMS II	Regional Input-Output Modeling System
ROG	reactive organic gas
ROW	right-of-way
RPS	Renewable Portfolio Standard
RV	recreational vehicle
RWQCB	Regional Water Quality Control Board
SAR	Second Assessment Report
SB	Senate Bill
SCADA	supervisory control and data acquisition
Scoping Plan	Scoping Plan for Achieving Carbon Neutrality
SCS	Soil Conservation Service

SCWA	Solano County Water Agency
SF_6	sulfur hexafluoride
SFNA	Sacramento Federal Non-attainment Area
SID	Solano Irrigation District
SL	screening level
SLF	sacred lands file
SMAQMD	Sacramento Metropolitan Air Quality Management District
SMARA	Surface Mining and Reclamation Act
SMP	Soil Management Plan
SO_2	sulfur dioxide
SPCC Plan	Spill Prevention, Control, and Countermeasure Plan
SR	sensitive receptor
SRA	State Responsibility Area
SSC	Species of Special Concern
STC	Sound Transmission Class
study area	Project disturbance footprint plus a 200-foot survey buffer
SVAB	Sacramento Valley Air Basin
SWPPP	stormwater pollution prevention plan
SWRCB	State Water Resources Control Board
TAC	toxic air contaminant
TCRM	Tribal cultural resource monitor
TMP	traffic management plan
TMS	thermal management system
TMS	thermal management system
TP	Technology Park
TTC	temporary traffic control
U.S.C.	United States Code
UC	University of California
UCERF3	Uniform California Earthquake Rupture Forecast
UCMP	University of California Museum of Paleontology
UL	Underwriters Laboratories
UNFCCC	United Nations Framework Convention on Climate Change
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USEPA	U.S. Environmental Protection Agency
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
VdB	vibration decibel
VDTTL	Vaca-Dixon-Tesla 500-kV Transmission Line
VMT	vehicle miles traveled
VRP	visibility-reducing particle
WDR	waste discharge requirement

WEAP	Worker Environmental Awareness Program
WMP	Wildfire Mitigation Plan
WOTUS	Waters of the United States
YSAQMD	Yolo Solano Air Quality Management District

1.0 EXECUTIVE SUMMARY

1.1 Project Overview[1]

North Bay Interconnect, LLC and Corby Energy Storage, LLC (Applicant)[2], propose to construct, own, and operate the Corby Battery Energy Storage System Project (Project). 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 (MW), 1,200-megawatt-hour (MWh) battery energy storage system (BESS), associated Project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, 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, northwest of the Project site and across Interstate (I) 80, via a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line, portions of which 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 easements on adjacent parcels or within the City of Vacaville road right-of-way. The overhead portions include two structures on the Project site, four structures between Kilkenny Road and I-80 on private land owned by the Applicant, and up-to four structures north of I-80 on PG&E's Vaca-Dixon Substation property, for a total of up-to 10 overhead gen-tie structures.

To accommodate the interconnection of the Project and other future projects, PG&E is currently performing network upgrades that include grading, construction of concrete pads, and relocating existing structures within the Vaca Dixon Substation. Specifically, for the Project and within the previously graded area within the Substation, PG&E will install a new 230-kV double bus bay structure with associated foundations and supports on approximately 0.6 acre of the existing substation. This new bay will house four switch support structures and associated equipment for the new 230-kV connection. In addition, PG&E will also construct, own, and operate the portion of the gen-tie between the point of change of ownership (POCO) and the New Corby Bay, including up to five[3] of the 10 structures, to connect the Project to the Vaca-Dixon Substation.

Currently, the proposed Project site is used as agricultural land for row crops such as wheat or barley. Surrounding land uses include several high-voltage transmission lines, agriculture, and single-building residential homes affiliated with agricultural uses. The surrounding agricultural uses include orchards to the south and irrigated pastures to the east and west. The land to the north of the Project site is rural residential, and the closest residence is located directly to the north of the Project site across Kilkenny Road. One warehouse is also located approximately 660 feet to the southeast of the Project site.

[1] Appendix B (a) (1) (A)
[2] North Bay Interconnect, LLC and Corby Energy Storage, LLC are both wholly-owned subsidiaries of NextEra Energy Resources. North Bay Interconnect, LLC will own and operate the interconnection facilities for the Project; and Corby Energy Storage, LLC will own and operate the BESS components of the Project.
[3] Following construction, ownership of the POCO structure south of I-80 will be transferred from PG&E to the Applicant, whereas the gen-tie line and structures between the POCO and Vaca-Dixon Substation will be owned and operated by PG&E.

Site elevations are relatively flat across the Project site, ranging from approximately 75 feet to 77 feet above mean sea level, with lower elevations to the east and higher elevations to the west.

1.1.1 Location[4]

1.1.1.1 Project Facilities

The Project site is situated roughly in the northwestern corner of Section 6, Township 6 North, Range 1 East, just outside the City of Vacaville, California, U.S. Geological Survey 7.5-minute topographic quadrangle at approximate latitude 38°23'32" North, longitude 121°54'27" West. A portion of the gen-tie line that connects the Project to the Vaca-Dixon Substation is within Section 1, Township 6 North, Range 1 West.

The property does not currently have an assigned street address; Solano County typically assigns an address during the permitting process. The Project site Assessor's Parcel Number (APN) is 0141-030-090, which encompasses approximately 40.3 acres. The Project parcel is bound to the east, south, and west by agricultural land, and to the north by rural residences and agricultural land. 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.

Figure 1-1 shows the Project's location in the region, Figure 1-2 shows the Project site location, and Figure 1-3 shows the Project layout.[5] Figure 1-4 provides an oblique aerial view rendering of the visual appearance of the site prior to construction, and Figure 1-5 provides an artist's rendering of the site after construction.[6] Ground-level site photographs and photo simulations are provided in Section 4.1, *Aesthetics.*

1.1.1.2 Offsite Facilities

The 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 sited on a gen-tie corridor of approximately 19.4 acres. The first section of the gen-tie corridor will begin at the northwest corner of the Project site and will follow one of the following route options:

1. **Underground Route Option #1** would be located within easements secured from private landowners (APNs 0141-030-080 and 0141-010-030), and the Solano Irrigation District (SID) and an encroachment permit from the City of Vacaville; this portion of the gen-tie will be underground, crossing Kilkenny Road and an SID canal before turning 90 degrees and running east-west parallel to the canal.
2. **Underground Route Option #2** would be located within easements secured from the private landowner of the parcel immediately west of the Project site (APN 0141-030-080) and an encroachment permit from the City of Vacaville to construct the gen-tie line within the City-maintained Kilkenny Road right-of-way.

[4] Appendix B (a) (1) (B), Appendix B (b) (1) (A)
[5] Appendix B (a) (1) (C)
[6] Appendix B (a) (1) (D), Appendix B (b) (2) (B)

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

The Applicant will design, construct, and operate the overhead portion of the gen-tie line from the Project substation, located in the western portion of the Project site, to the POCO within the gen-tie corridor south of I-80. PG&E will be responsible for the portion of the gen-tie line between the POCO and the point of interconnection (POI) at the PG&E Vaca-Dixon Substation, including the final five structures and the I-80 crossing. The gen-tie line is described in further detail in Section 3.0, *Electrical Transmission*.

The Project will not require water, natural gas, or wastewater service during operations. As such, no natural gas supply or wastewater discharge pipelines will be constructed. The Project will use water during construction and for temporary landscaping irrigation following construction; water use is further described in Section 2.0, *Project Description,* and Section 4.10, *Hydrology/Water Quality*.

1.1.1.3 Mailing List for Nearby Properties

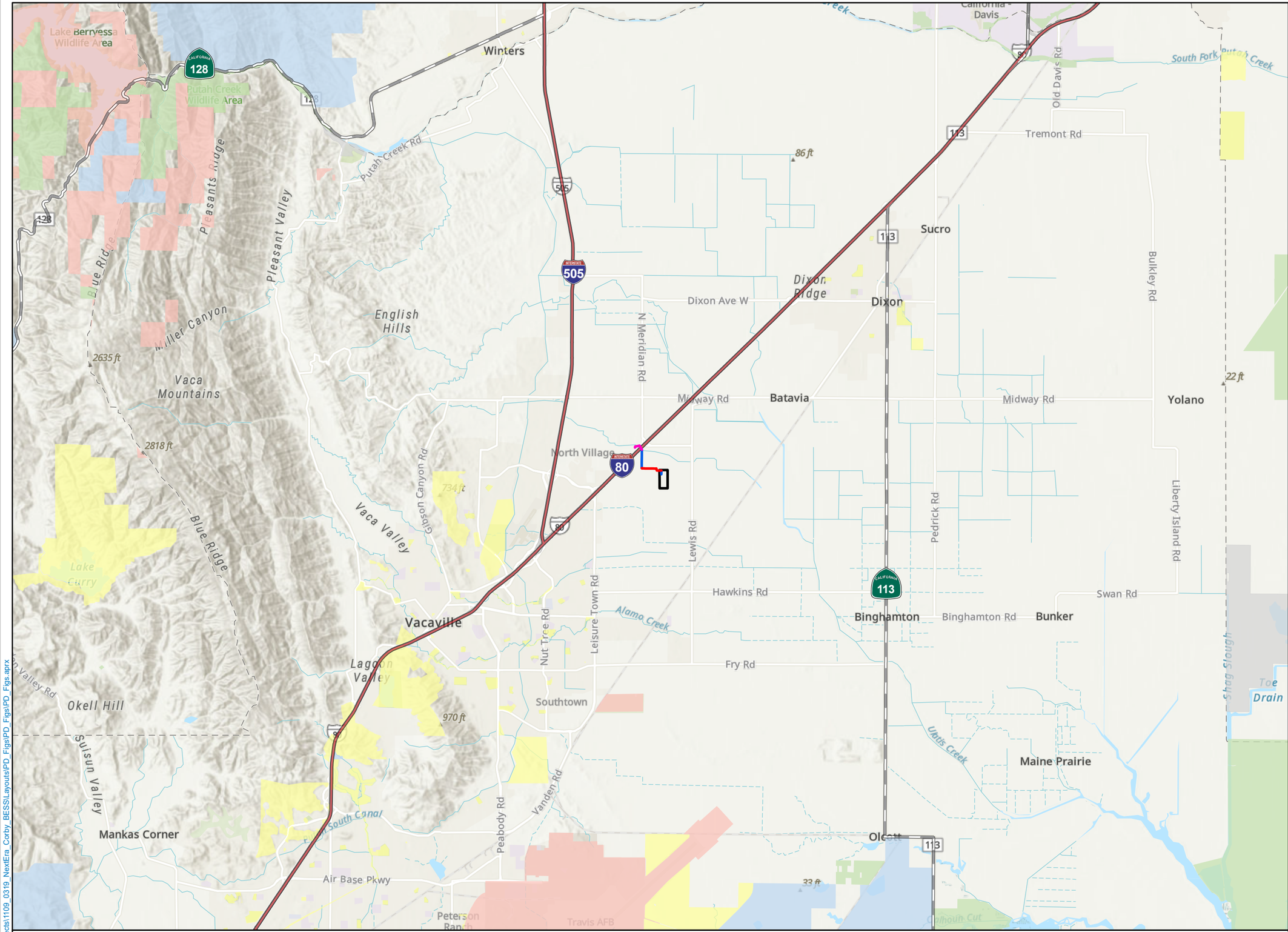
Appendix 1-A includes a list of current assessor's parcel numbers and owners' names and addresses for all parcels within 1,000 feet of the proposed BESS facility and 500 feet of the proposed gen-tie transmission line.[7] Appendix 1-A also includes the direct mailing addresses for the owners and occupants of properties contiguous to the proposed BESS facility and gen-tie line, as shown on the latest equalized assessment roll. A map showing the parcels in the notice area is also included.

[7] Appendix B (a) (1) (E)

NextEra Energy Corby Battery Energy Storage System Project

Figure 1-1 Project Vicinity

Solano County, CA



Proposed Features

- Gen-tie (Overhead)
- Gen-tie (Underground; 2 Options)
- Gen-tie (Overhead; PG&E)
- Project Site

Public Land Ownership

- Local Government
- Federal
- Non Profit
- Special District
- State

Transportation

- Interstate Highway
- State Highway

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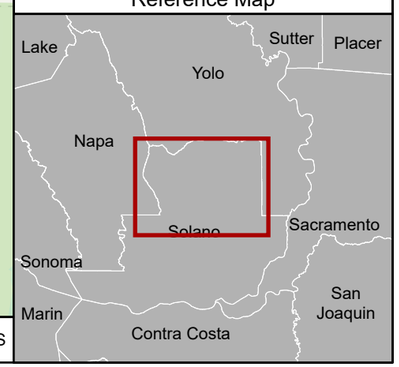
NOT FOR CONSTRUCTION

Reference Map



1:120,000 NAD 1983 StatePlane California II FIPS 0402 Feet

0 5 10 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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NextEra Energy Corby Battery Energy Storage System Project

Figure 1-2 Site Location

Solano County, CA

- Applicant-Owned Parcels
- Township Range
- Section

Proposed Features

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

Transportation

- Interstate Highway
- Road

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NOT FOR CONSTRUCTION

Reference Map

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

0 1 2 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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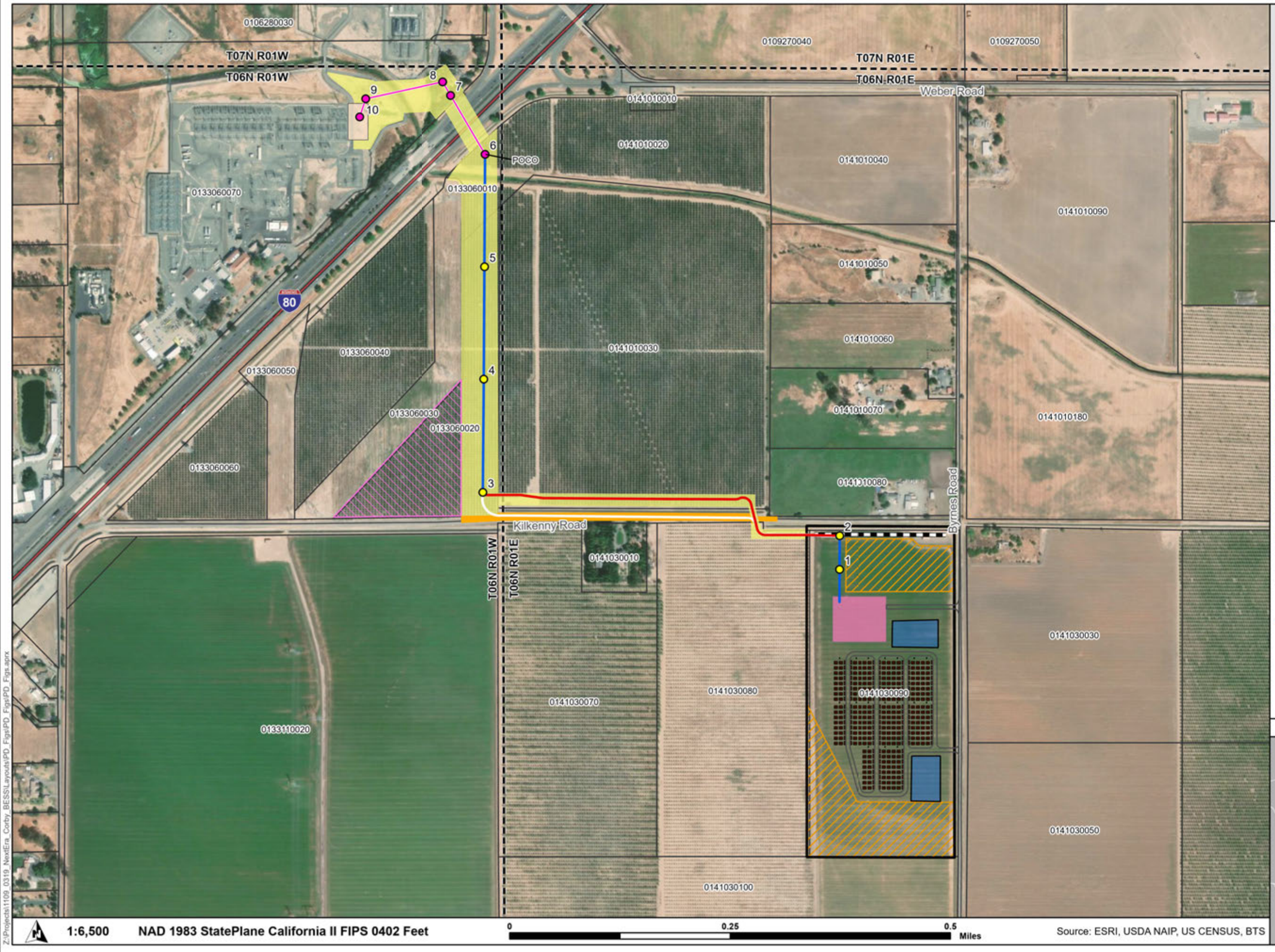
NextEra Energy Corby Battery Energy Storage System Project

Figure 1-3 Project Layout

Solano County, CA



- Parcels
- Township Range

Proposed Features

- Proposed Pole
- Gen-tie (Overhead)
- Gen-tie (Underground; Option 1)
- Gen-tie (Underground; Option 2)
- Sound Barrier
- Access Road
- Construction Laydown Area
- Gen-tie Corridor (Option 1)
- Gen-tie Corridor (Option 2)
- Gen-tie Laydown Area
- BESS Array
- Project Site
- Stormwater Pond
- Project Substation
- New Corby Bay

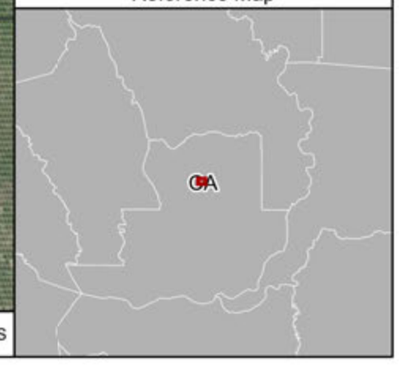
PG&E Features

- Pole Locations (PG&E)
- Gen-tie (Overhead; PG&E)

TETRA TECH

NOT FOR CONSTRUCTION

Reference Map



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0 0.25 0.5 Miles

Source: ESRI, USDA NAIP, US CENSUS, BTS

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Corby Battery Energy
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Figure 1-4:
Existing Site Rendering

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NextEra Energy
Corby Battery Energy
Storage System Project

Figure 1-5:
Proposed Site Rendering

1.1.2 Key Objectives

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

The Applicant has identified the following Project objectives:

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

1.1.3 Key Project Benefits[8]

Battery energy storage is a rapidly growing technology that has experienced significant growth in the last decade. An initial driver for this technology was the development and production of electric vehicles. Today, larger stationary battery storage systems are becoming more common. The need to store intermittent renewable energy for use at peak times, improve reliability, and enhance the dispatching of electricity contribute to the need for additional battery energy storage development.

Energy providers are actively searching for long-term energy and storage projects needed to meet their RPS and Integrated Resource Plan (IRP) obligations under Senate Bill (SB) 350 and SB 100, and BESS are a critical component of this effort. Although Solano County is already incorporating intermittent resources such as wind and solar to support California's energy grid, an accompanying portfolio of resources that provide operational resiliency is needed to maintain grid stability and deliver renewable power to end-users during high demand times. Meeting the state's reliable, low-carbon grid operational needs will require a combination of renewable resources as well as BESS, like the proposed Project.

In addition to helping the nation, state, and utilities meet their renewable energy goals, the Project will provide substantial economic benefits. Specifically, the Project will create substantial economic activity from the construction and operation of the Project, including a significant number of construction jobs, increased tax base, and an increase in local business activity.

1.1.4 Project Operation

The Project will store energy when supply for electricity is high (e.g., during the middle of the day) and return the energy to the grid when demand for electricity is high (typically between 4 PM and 8 PM),

[8] Cal. Code Regs., tit. 20 § 1879(a)(4)

thereby reducing the need for gas-fired generation as the sun sets and electrical demand for energy simultaneously increases. The Project is designed to discharge up to 300 MW, delivering up to 1,200 MWh of stored energy during peak demand periods.

1.1.5 Opt-in Application Requirements

This application has been prepared following the requirements outlined in Section 1877 of the *Notice of Approval of Emergency Regulatory Action for Opt-In Regulations* adopted by the California Energy Commission (CEC) on October 24, 2022. The subsections below describe how the Project and application conform with the specified application requirements.

1.1.5.1 Appendix B and Title 20, Section 1704(a) Requirements

This application contains all the information specified by Appendix B, *Information Requirements for an Application for Certification (AFC) or Small Power Plant Exemption (SPPE),*[9] and meets the general requirements set forth in section 1704(a) of Title 20. To facilitate review of the application, Appendix B information requirement section references are included as footnotes where the required information is provided within the application. Additionally, Appendix 1-E includes data adequacy checklists, which identify the location in this application where required information is provided. The checklists also identify information requested by Appendix B regulations that is not applicable to the Project.

1.1.5.2 Explanation of How the Project Meets the Definition of "Facility" in Public Resources Code Section 25545(b)[10]

The proposed Project meets the following definition of "facility" in Public Resources Code (PRC) section 25545(b)(2): *An energy storage system as defined in Section 2835 of the Public Utilities Code that is capable of storing 200 megawatt-hours or more of electrical energy.*

This application seeks certification as an energy storage system as defined in PRC section 25545(b)(2). As described in greater detail in Section 2.0, *Project Description*, the Project will provide 300 MW and 1,200 MWh of electricity.

1.1.5.3 Certifications Required by Public Resources Code Sections 25545.3.3 and 25545.3.5[11]

As summarized below, this application contains all certifications required by PRC sections 25545.3.3 and 25545.3.5 contained in Appendix 1-B.

Sections 25545.3.3 and 25545.3.5 require this application to include a certification relating to specific commitments concerning labor used to construct the facility. The Applicant "certifies" that the construction of the covered project is not in its entirety a public work for purposes of Chapter 1 (commencing with Section 1720) of Part 7 of Division 2 of the Labor Code. The Applicant further certifies that the Project will be constructed pursuant to a project labor agreement (PLA) and that the terms of the PLA will comply with Section 25545.3.3 (b) (6) and Section 25545.3.5 (e) and therefore will meet the requirements of all of the applicable provisions of Section 25545.3.

[9] Cal. Code Regs., tit. 20, div. 2, ch. 5, appendix B
[10] Cal. Code Regs., tit. 20, § 1877(b)
[11] Cal. Code Regs., tit. 20, § 1877(c)

1.1.5.4 Federal, State, and Local Permit Applications[12]

A listing and brief description of the federal, state, and local permits and approvals that have been submitted, or may be required, to implement the proposed Project is provided below.

Federal

No federal permits will be required to implement the proposed Project.

State

The following state applications are required:

- **California Public Utilities Commission (CPUC):** Since the Project interconnection facilities (e.g., gen-tie line) are required to be owned in part by PG&E, the CPUC would have jurisdiction over approval of those portions of the Project, pursuant to General Order 131-D, and may rely on this application and the CEC's analysis to fulfill its California Environmental Quality Act (CEQA) review obligations of any substation or interconnection facility improvements under its jurisdiction that are necessary to serve the Project. PG&E will be responsible for this submittal and coordination with CPUC after the CEC issues its Decision on the Application.

Local

No discretionary local permits will be required to implement the proposed Project.

1.1.5.5 Location Not on a Prohibited Site[13]

The Project is not on a prohibited site as identified in PRC section 25527, on a site designated by the California Coastal Commission under PRC section 30413(b), or on a site designated by the San Francisco Bay Conservation and Development Commission under Government Code section 66645(b).

Public Resources Code Section 25527

PRC section 25527[14] generally states the following areas should not be approved as a site for a facility:

- State, regional, county, and city parks;
- Wilderness, scenic or natural reserves;
- Areas for wildlife protection, recreation, historic preservation;
- Natural preservation areas; or
- Estuaries in an essentially natural and undeveloped state.

The Project site is located on a private parcel previously used for agricultural purposes and does not meet any of the criteria above. See Section 4.11, *Land Use and Planning,* for additional information regarding the Project site characteristics and designations.

[12] Cal. Code Regs., tit. 20, § 1877(d)
[13] Cal. Code Regs., tit. 20, § 1877(e)
[14] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=25527

Public Resources Code Section 30413(b)

PRC section 30413(b)[15] requires the California Coastal Commission to designate specific locations within the coastal zone where the location of a facility as defined in Section 25110 would prevent the achievement of California Coastal Act objectives. The Project site is not located in or near the coastal zone.[16]

Government Code Section 66645(b)

Government Code section 66645(b)[17] requires the San Francisco Bay Conservation and Development Commission (BCDC) to designate specific locations within the Suisun Marsh or their area of jurisdiction where the location of a facility as defined in Section 25110 would be inconsistent with the Suisun Marsh Protection Plan or the San Francisco Bay Plan. The Project site is not located in or near the Suisun March or BCDC's area of jurisdiction.[18]

1.1.5.6 Overall Net Positive Economic Benefit to the Local Government[19]

Consistent with PRC section 25545.9, the Project will have an overall net positive economic benefit to Solano County, the local government that would have had permit authority over the site and related facility. The analysis provided in Section 4.14.3.3 demonstrates that the Project will result in net positive economic benefits in the two areas identified in PRC section 25545.9 that can be quantified at this time. These two areas are: (a) employment growth, and (f) property taxes and sales and use 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, which was for agricultural purposes (row crops and hay production).

- **Employment growth.** Project construction and commissioning will result in a one-time, short-term net economic benefit of 90 direct jobs and 137 total (direct, indirect, and induced) jobs. Project operations will result in annual net employment benefits of 5 direct jobs and 15 total (direct, indirect, and induced) jobs. Direct impacts are those supported by expenditures made by the onsite activity (for example, construction or farm labor). Secondary (indirect and induced) impacts are those supported elsewhere in the local economy.
- **Property taxes.** Following construction, the Project will result in an estimated net economic benefit 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 benefit of $70.2 million relative to the former agricultural use, with an average annual net benefit of $2.3 million.
- **Sales and use tax revenues.** Project construction and commissioning will result in an estimated one-time net economic benefit 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. Following construction, local expenditures

[15] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=30413
[16] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?lawCode=PRC&sectionNum=30103
[17] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=66645.&lawCode=GOV
[18] https://leginfo.legislature.ca.gov/faces/codes_displaySection.xhtml?sectionNum=66645.&lawCode=GOV
[19] Cal. Code Regs., tit. 20, § 1877(f), § 1879(a)(7)

associated with Project operations 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.

In addition to these two areas (employment growth and tax revenues) where net economic benefits can be quantified, the Project is also anticipated to result in net positive economic benefits related to two of the other areas identified in PRC section 25545.9: (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 in Section 4.14.3.3.

1.1.5.7 Legally Binding and Enforceable Agreement(s) to benefit Community-based Organizations[20]

As part of the Project, the Applicant plans on making significant investments over the next 10 years with community-based initiatives and programs in the Solano County area. The Applicant has met with multiple Solano County-based community organizations to better understand their immediate and long-term needs and how their missions directly support the residents of the surrounding communities. A brief description of several of the opportunities currently under consideration is provided in the preliminary Community Benefits Plan in Appendix 1-C.

1.1.5.8 Requirements of Public Resources Code Sections 21183 and 21183.6[21]

The Project meets the requirements of PRC sections 21183 and 21183.6 for the following reasons:

- The Project qualifies as a leadership project because it will comply with PRC section 21183 (a) (1) as it will result in a minimum investment of one hundred million dollars ($100,000,000) in California upon completion of construction. See Section 4.14 of this Application for a description of the Project's capital investment.
- The Project will be constructed in accordance with a PLA that will comply with Section 21183 (b).
- The Project will comply with Section 21183 (c) and Section 21183.6 because it will not result in significant GHG emission impacts as demonstrated in Section 4.8, *Greenhouse Gas Emissions*, of this Application.
- The Project will generate very little solid and no organic waste and therefore it will not be required to comply with the waste-related laws referenced in Section 21183 (d).
- By filing this Opt-In Application with the CEC, the Applicant agrees to be legally bound by the terms and conditions of the CEC License, thereby satisfying Section 21183 (e).
- The Applicant also agrees to pay the court and record preparation costs identified in Section 21183 (f) and (g).

[20] Cal. Code Regs., tit. 20, § 1877(g)
[21] Cal. Code Regs., tit. 20, § 1877(h)

1.2 Project Schedule[22]

The Project is anticipated to be completed in approximately 14 months and will begin with site preparation and finish with commissioning activities. Construction is proposed to initiate in February 2026 and complete by April 2027, at which time commercial operation will begin.

1.3 Project Owners and Operators

1.3.1 BESS Owners and Operators[23]

North Bay Interconnect, LLC and Corby Energy Storage, LLC are both wholly-owned subsidiaries of NextEra Energy Resources. NextEra Energy Resources, which operates in 41 states and Canada as of year-end 2022, is the world leader in electricity generated from the wind and sun and a world leader in battery storage. As of the end of 2022, NextEra Energy Resources has invested $115 billion in capital energy infrastructure.

1.3.2 Electric Transmission Facilities Owners and Operators[24]

Energy will be transported between the Project substation to the nearby PG&E Vaca-Dixon Substation through a gen-tie transmission line, portions of which will be installed overhead and underground. The Applicant will design, construct, own, and operate the portion of the gen-tie line from the Project site to the POCO located south of I-80. PG&E will design, construct, own, and operate the portion of the gen-tie line from the POCO to the POI at the Vaca-Dixon Substation, including the final five structures and the I-80 crossing. Once operational, PG&E will transfer ownership of the POCO structure south of I-80 to the Applicant. The gen-tie is described in further detail in Section 3.0, *Electrical Transmission*.

1.4 Project Alternatives

Section 5.0, *Alternatives*, presents a detailed discussion of Project alternatives evaluated by the Applicant.

The No Project alternative was evaluated to consider the merits of not constructing the Project. 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. 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.

[22] Appendix B (a) (2)
[23] Appendix B (a) (3) (A,C)
[24] Appendix B (a) (3) (B,C)

In addition to the Project site, two site alternatives were considered. These alternative sites were compared against the proposed Project site, and it was determined that they would generally have greater environmental impacts due to existing conditions on the alternative sites and greater distance to Vaca-Dixon Substation. One of the sites would require a rezone from the City of Vacaville, and this rezone request was denied by the City. The Applicant does not have either of the alternative sites under site control, and there is no certainty that it could do so. Therefore, these alternative sites were rejected.

Several technology alternatives for energy storage were also considered for the Project including compressed air energy storage, thermal energy storage, supercapacitors, and hydrogen storage. 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, battery energy storage is the preferred technology for the Project.

In addition to site and technology alternatives, alternative gen-tie routes were considered for the Project. The proposed Project gen-tie route was selected over the alternative routes because it minimizes route length, parallels portions of existing transmission corridors, minimizes existing transmission line crossings, avoids areas that PG&E indicated would not be suitable for routing of a new transmission line, and takes into account landowner feedback and preferences.

1.5 Environmental Considerations

Pursuant to the requirements set forth in the CEQA and the CEC's regulations, 20 areas of possible environmental impact from the proposed Project were investigated. Detailed descriptions and analyses of these areas are presented in Sections 4.1 through 4.20 of the application. With the implementation of the proposed Project Design Measures discussed in Section 2.0, *Project Description*, and in detail in the environmental review section, as well as the anticipated Conditions of Certification, there will be no significant unmitigated environmental impacts associated with the construction and operation of the Project. This Executive Summary highlights findings related to seven subject areas that are typically of interest during CEC proceedings: aesthetics, air quality, biological resources, hydrology and water quality, land use and planning, noise, and wildfire.

1.5.1 Aesthetics

Section 4.1, *Aesthetics,* and Appendix 4.1-A, *Visual Impact Assessment,* provide a detailed analysis of issues related to aesthetic resources in the context of the proposed Project. The Project will not result in any substantial adverse impacts to aesthetic resources nor will it substantially degrade the existing visual character or quality of public views of the site and its surroundings.

No substantial adverse impacts will occur to scenic vistas because none were identified that offer views of the Project site, and views of the Project site will be limited to a short distance due to orchards as well as residential and agricultural structures in the surrounding area. The Project facilities including the gen-tie line will have a consistent visual character with the existing surrounding electrical transmission lines and Vaca-Dixon Substation. Little change to visual character and quality are expected at the identified key observation points.

1.5.2 Air Quality

Section 4.3, *Air Quality,* and Appendix 4.3-A, *Air Quality and Greenhouse Gas Emissions Analysis,* provide an assessment of potential air quality impacts associated with construction and operation of the Project. Construction and operations emissions will be below regulatory thresholds and best management practices will be implemented for fugitive dust control during construction; therefore, the Project will not result in a cumulatively considerable net increase of criteria pollutants that would violate federal or state air quality standards or contribute substantially to an existing or projected air quality violation. Project-related emissions impacts will be less than significant.

1.5.3 Biological Resources

Section 4.4, *Biological Resources,* and Confidential Appendix 4.4-A, *Biological Resources Report,* provide an analysis of biological resources in the Project area and potential impacts associated with construction and operation of the Project. With implementation of the proposed Project Design Measures, the Project will not result in significant impacts to biological resources.

The Project site, gen-tie corridor, and gen-tie laydown area are in areas that are currently used as agricultural lands. These areas may support several special-status species including the following: Swainson's hawk (*Buteo swainsoni*), a state threatened species; burrowing owl (*Athene cunicularia*), a state candidate endangered species; and white-tailed kite (*Elanus leucurus*), a state fully protected species. There are reported occurrences of these species in the general vicinity of the biological study area (BSA).

Multiple field surveys were conducted between June 2023 and July 2024 to support the biological resources assessment, including habitat assessment surveys, protocol surveys for Swainson's hawk, protocol breeding season surveys for burrowing owl, and aquatic resource delineation surveys. The protocol level burrowing owl surveys identified that there was suitable nesting habitat for the species within the BSA, but no burrowing owls or their sign were observed. There are 200 California Natural Diversity Database records of Swainson's hawk within 10 miles of the Project site, and two Swainson's hawk nest pairs were identified within 0.5 mile of the Project site and gen-tie corridor. Several aquatic features were identified in the vicinity of the Project site, but all of these features will be avoided by Project activities.

Construction and operation of the Project will result in a total disturbance footprint of approximately 65.9 acres, including the 40.3-acre Project site, gen-tie corridor, and gen-tire laydown area. The Project site will experience 15.9 acres of permanent impacts, and 28.4 acres of temporary impacts. The gen-tie corridor and gen-tie laydown will result in the permanent removal of 21.6 acres of orchards. Following construction, the permanently removed orchards will be available for use by a variety of species, including Swainson's hawk, burrowing owl, and white-tailed kite, resulting in a net benefit and additional 5.7 acres of habitat that may be used by these species should they occur in the Project vicinity in the future. The areas subject to temporary disturbance within the Project site, and the non-developed portions of the gen-tie corridor and gen-tie laydown area, will be revegetated with an application of native seed mix. Furthermore, 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 Swainson's hawk, burrowing owl, and white-tailed kite.

Sections 2.8 and 4.4.5 outline several general and species-specific Project Design Measures that were developed to reduce any potentially significant impacts to biological resources to less than significant.

1.5.4 Hydrology and Water Quality

Section 4.10, *Hydrology/Water Quality,* provides an analysis of water resources in the Project area and potential impacts associated with construction and operation of the Project. With implementation of the proposed Project Design Measures, the Project will not result in significant impacts to water resources.

Limited water will be required for construction; up to 30 acre-feet will be used 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 acre-feet) 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. Project water will be obtained from the SID or via development of an onsite groundwater supply well.

Construction water quality impacts will be minimized through compliance with the National Pollutant Discharge Elimination System General Permit for Stormwater Discharge Associated with Construction and Land Disturbance Activities, including development and implementation of a Stormwater Pollution Prevention Plan and site-specific best management practices.

The Project design incorporates onsite stormwater facilities, including a perimeter ditch and two retention basins to control facility runoff and ensure that future peak discharges from the Project site do not exceed the peak discharges for the 100-year, 24-hour storm under current conditions per Solano County's standards. The retention basins will be located east of the Project substation and southeast of the BESS array within the Project parcel, and onsite stormwater flows will be conveyed to the proposed retention basins via overland flow and a perimeter ditch. .

No water will be required for Project operations. 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.

1.5.5 Land Use and Planning

As discussed in Section 4.11, *Land Use and Planning,* the Project site lies within Solano County's jurisdiction and land uses on the Project site are governed by the County's General Plan and Zoning Ordinance. The proposed gen-tie line is partially located within Solano County and partially located within the City of Vacaville. 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 located north of I-80 is also within Solano County jurisdiction and is zoned as Exclusive Agriculture (A-20) with a County General Plan land use designation of Public Quasi-Public (PQP). The portion of the gen-tie corridor located within City of Vacaville jurisdiction is zoned as Business Park (BP) and Residential High Density (RH), with the same City General Plan land use designations.

The primary concern regarding land use plans, policies, and regulations is related to the Project's battery energy storage use. Although BESS facilities are permitted within the A-40 zoning district with a Use Permit, the County passed Ordinance No. 2024-1852-U-E on February 27, 2024, which enacted a 2-year moratorium on the approval of "front-of-the-meter" BESS facilities such as the proposed Project. 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 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 is currently developing standards to implement Senate Bill 38, which amends California PRC 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.

Prior to the implementation of Ordinance No. 2024-1852-U-E, the Applicant filed a Conditional Use Permit application with the County for the proposed Project in June 2023. Although the Conditional Use Permit application was not processed due to the implementation of Ordinance No. 2024-1852-U-E, the Applicant has incorporated the County's preliminary input on Project design requirements and environmental considerations into the current Project design, and environmental concerns raised by the County are addressed in this Application.

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. The Applicant will also develop an emergency response and emergency action plan in accordance with SB 38 requirements. 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.

However, due to the conflict with Ordinance No. 2024-1853-U-E, the Project is requesting the Commission to conclude that the Project need not comply with Ordinance No. 2024-1853-U-E and make the appropriate findings under PRC Section 25525 that the Project "is required for public convenience and necessity and that there are not more prudent and feasible means of achieving public convenience and necessity."

Finally, the Project will also require various discretionary easements and non-discretionary encroachment permits for construction of the gen-tie line from the Project site to the Vaca-Dixon Substation. For either gen-tie option, non-discretionary encroachment permits will be required from Solano County and City of Vacaville for temporary road closures and for site ingress/egress. Underground Route Option #1 would also require a non-discretionary encroachment permit from the City of Vacaville for the crossing under Kilkenny Road, while Underground Route Option #2 would require a non-discretionary encroachment permit from the City of Vacaville for placement of the gen-tie within the

Kilkenny Road right-of-way. Lastly, Underground Route Option #1 would require a discretionary easement from SID for the gen-tie line crossing under the SID canal located north of Kilkenny Road.

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. Although the City has also enacted a moratorium on BESS facilities (Ordinance No. 1993), the Project will not conflict with this ordinance because only transmission infrastructure associated with the gen-tie line will be located within the City's jurisdiction.

Due to the current BESS moratorium, the County has prohibited the issuance of the required non-discretionary encroachment permits. Therefore, the Project is requesting the Commission to either issue the encroachment permits under its exclusive permitting jurisdictional authority or to conclude the Project need not comply with the County encroachment permit ordinance and make the appropriate findings under PRC Section 25525 that the Project "is required for public convenience and necessity and that there are not more prudent and feasible means of achieving public convenience and necessity."

Additionally, in the event that the Applicant is unable to secure the required non-discretionary encroachment permits from the City of Vacaville, the Project is requesting the Commission to either issue the encroachment permits under its exclusive permitting jurisdictional authority or to conclude the Project need not comply with the City encroachment permit ordinance and make the appropriate findings under PRC Section 25525 that the Project "is required for public convenience and necessity and that there are not more prudent and feasible means of achieving public convenience and necessity."

If a local government entity refuses to issue non-discretionary permits, it would thwart the entire objectives of Assembly Bill 205. Clearly the legislature did not intend to grant veto power to a local government entity when it granted the CEC exclusive jurisdiction to site power plants including the "use of the site and related facilities" in PRC Section 25545.1 (b) and (c).

1.5.6 Noise

Section 4.13, *Noise,* and Appendix 4.13-A, *Noise Impact Study,* present an analysis of potential Project noise impacts relative to applicable standards. Project sound levels will not exceed applicable standards and will not result in a significant impact during construction or operation.

Construction noise levels were modeled using conservative scenarios for hours of construction activities, equipment, and duration of equipment use, and it was determined that noise levels associated with the Project will be below the Solano County General Plan construction sound level limit of 65 A-weighted decibels (dBA) at the nearest noise-sensitive receiver.

Operational noise levels were also modeled at the nearest six noise-sensitive receivers in the surrounding community and the predicted sound levels comply with the Solano County General Plan limit of 50 dBA and the Solano County Code limit of 65 dBA.

1.5.7 Wildfire

Section 4.20, *Wildfire,* identifies and provides an analysis related to wildfire in the context of the Project. With implementation of the proposed Project Design Measures, the Project will not result in significant impacts related to wildfires. The Project will be designed and operated in compliance with applicable requirements to minimize risk of fire from stationary BESS and contain fire in the event of such an incident. The Project will also comply with applicable county and state fire code requirements, standards from Underwriters Laboratories (UL) and the National Fire Protection Association.

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. Thermal runaway protection will be provided by physical barriers and a battery management system which is designed to detect high temperatures at the battery cell or battery module level and automatically shut down the battery rack in response. The proposed BESS will also come equipped with a deflagration prevention and control system. 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.

The Project site and gen-tie corridor are not located in or near any State Responsibility Areas or lands classified as Very High Fire Hazard Severity Zones, and areas identified by the California Department of Forestry and Fire Prevention as having a substantial or very high risk, and the Project will not substantially impair an adopted emergency response plan or emergency evacuation plan. It will also not expose Project occupants to pollutant concentrations from a wildfire due to slope, prevailing winds, or other factors, or with regard to the exposure of people or structures to downslope or downstream flooding or landslides as a result of runoff, post-fire slope stability, or drainage changes.

1.6 Persons who Prepared the Application

Persons with primary responsibility for preparing each section of the Opt-in Application are listed in Appendix 1-D.[25]

[25] Cal. Code Regs., tit. 20, § 1704, (a) (4)

2.0 PROJECT DESCRIPTION

North Bay Interconnect, LLC and Corby Energy Storage, LLC (Applicant)[1], propose to construct, own, and operate the Corby Battery Energy Storage System Project (Project). 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 (MW), 1,200-megawatt-hour (MWh) battery energy storage system (BESS), associated Project substation, inverters, and other ancillary facilities, such as fencing, sound barrier, roads, 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, northwest of the Project site and across Interstate (I) 80, via a 1.1-mile-long 230-kilovolt (kV) generation tie (gen-tie) line, portions of which would be installed overhead and underground. The underground portions of the gen-tie line will run east-west parallel to and crossing Kilkenny Road, either within acquired easements on adjacent parcels or within the City of Vacaville road right-of-way. The overhead portions will include two structures on the Project site, four structures between Kilkenny Road and I-80 on private land owned by the Applicant, and up to four structures north of I-80 on PG&E's Vaca-Dixon Substation property, for a total of up to 10 overhead gen-tie structures.

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

The following description has been prepared to provide an overview of the facilities that are proposed to be constructed and operated for the Project.

2.1 Location of Facilities[3]

The Project site is situated roughly in the northwestern corner of Section 6, Township 6 North, Range 1 East, just outside the City of Vacaville, California, U.S. Geological Survey 7.5-minute topographic quadrangle at approximate latitude 38°23'32" N, longitude 121°54'27" W. The overhead portion of the gen-tie that connects the Project site to the Vaca-Dixon Substation is within Section 1, Township 6 North, Range 1 West.

The permanent operational facility, including the BESS array, Project substation, associated equipment, roads, fencing, sound barrier, and drainage facilities, will be located on an approximately 40.3-acre

[1] North Bay Interconnect, LLC and Corby Energy Storage, LLC are both wholly-owned subsidiaries of NextEra Energy Resources. North Bay Interconnect, LLC will own and operate the interconnection facilities for the Project; and Corby Energy Storage, LLC will own and operate the BESS components of the Project.
[2] Following construction, ownership of the POCO structure south of I-80 will be transferred from PG&E to the Applicant, whereas the gen-tie line and structures between the POCO and Vaca-Dixon Substation will be owned and operated by PG&E.
[3] Appendix B (a) (1) (A)

parcel (Project site). The Project site includes the entirety of the Project parcel (Assessor's Parcel Number [APN] 0141-030-090). The Project parcel is bound on all sides by existing agricultural lands, with a rural residence located across Kilkenny Road directly to the north. 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.

Refer to Figure 1-1 for the Project's location in the region, Figure 1-2 for the site location, and Figure 1-3 for the site layout.

2.2 Location of Offsite Facilities[4]

The 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 sited on an approximately 19.4-acre gen-tie corridor. The first section of the gen-tie corridor will begin at the northwest corner of the Project site and will follow one of the following route options:

1. **Underground Route Option #1** would be located within easements secured from private landowners (APNs 0141-030-080 and 0141-010-030) and Solano Irrigation District (SID) and an encroachment permit from the City of Vacaville; this east-west portion of the gen-tie will be underground, crossing Kilkenny Road and an SID canal before turning 90 degrees and running east-west parallel to the canal.
2. **Underground Route Option #2** would be located within easements secured from the private landowner of the parcel immediately west of the Project site (APN 0141-030-080) and an encroachment permit from the City of Vacaville to install the gen-tie within the City-maintained Kilkenny Road right-of-way.

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

The Applicant will design, construct, own, and operate 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 portion of the gen-tie between the POCO and the point of interconnection (POI) at the PG&E Vaca-Dixon Substation, including the final five structures, the I-80 crossing, and the New Corby Bay. The gen-tie line and interconnection facilities are described in further detail in Section 3.0, *Electrical Transmission*.

No offsite water, sewer, or gas lines or connections will be constructed or required for the Project.

[4] Appendix B (a) (1) (A)

2.3 BESS Facility Description, Design, and Operation[5]

2.3.1 Site Selection[6]

Parcels within Solano County were evaluated based on the site requirements and additional screening criteria to assess site feasibility.[7]

The minimum site requirements consisted of the following:

- **Parcel size:** A parcel must be approximately 25 acres in size to allow design flexibility for a 300-MW project that includes batteries, inverters, transformers, Project substation, stormwater control, and fencing.
- **Distance from the Vaca-Dixon Substation:** The distance and corresponding gen-tie length must be minimized to minimize impacts, number of landowners, energy loss, and costs associated with gen-tie construction and operation. A site no more than 1 to 2 miles from the interconnection substation is the most desirable considering the tradeoff of energy losses and economic losses.

After consideration of the minimum site requirements above, additional screening criteria were established to assess site feasibility. These screening criteria relate to land use, 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 flood zones, existing development, the parcel slope, and the feasibility of securing easements for a gen-tie line.

2.3.2 Facility Components

The Project consists of the following components as depicted on the site plan (Figure 2-1) and elevation drawings (Figures 2-2a and 2-2b)[8,9]. Project substation site plan detail and elevation drawings are provided in Figures 3-5a through 3-5c in Section 3.0, *Electrical Transmission*.

- BESS;
- Onsite Project substation;
- Inverters;
- Gen-tie line; and
- Ancillary facilities.

2.3.2.1 Battery Energy Storage System[10]

The Project will use lithium-ion battery technology, which is considered one of the safest, most easily understood, and most efficient methods of energy storage on the market. Lithium-ion technology has

[5] Appendix B (b) (1) (C)
[6] Appendix B (b) (1) (D)
[7] Appendix B (b) (1) (D)
[8] Appendix B (b) (1) (B)
[9] Appendix B (g) (6) (D) (i)
[10] Appendix B (h) (3) (B)

a long lifespan and boasts superior safety and stability characteristics. The Applicant is proposing Model CBFAD batteries manufactured by Contemporary Amperex Technology Company (CATL). CATL's integrated all-in-one energy storage solutions feature safe, reliable lithium iron phosphate battery technology. The CATL EnerC+ model features a highly efficient system with safe and long lifecycle battery cells. Its compact mechanical design has a minimized footprint and provides high-energy density, while also integrating a local controller, thermal management system (TMS) for maintaining optimal temperatures.

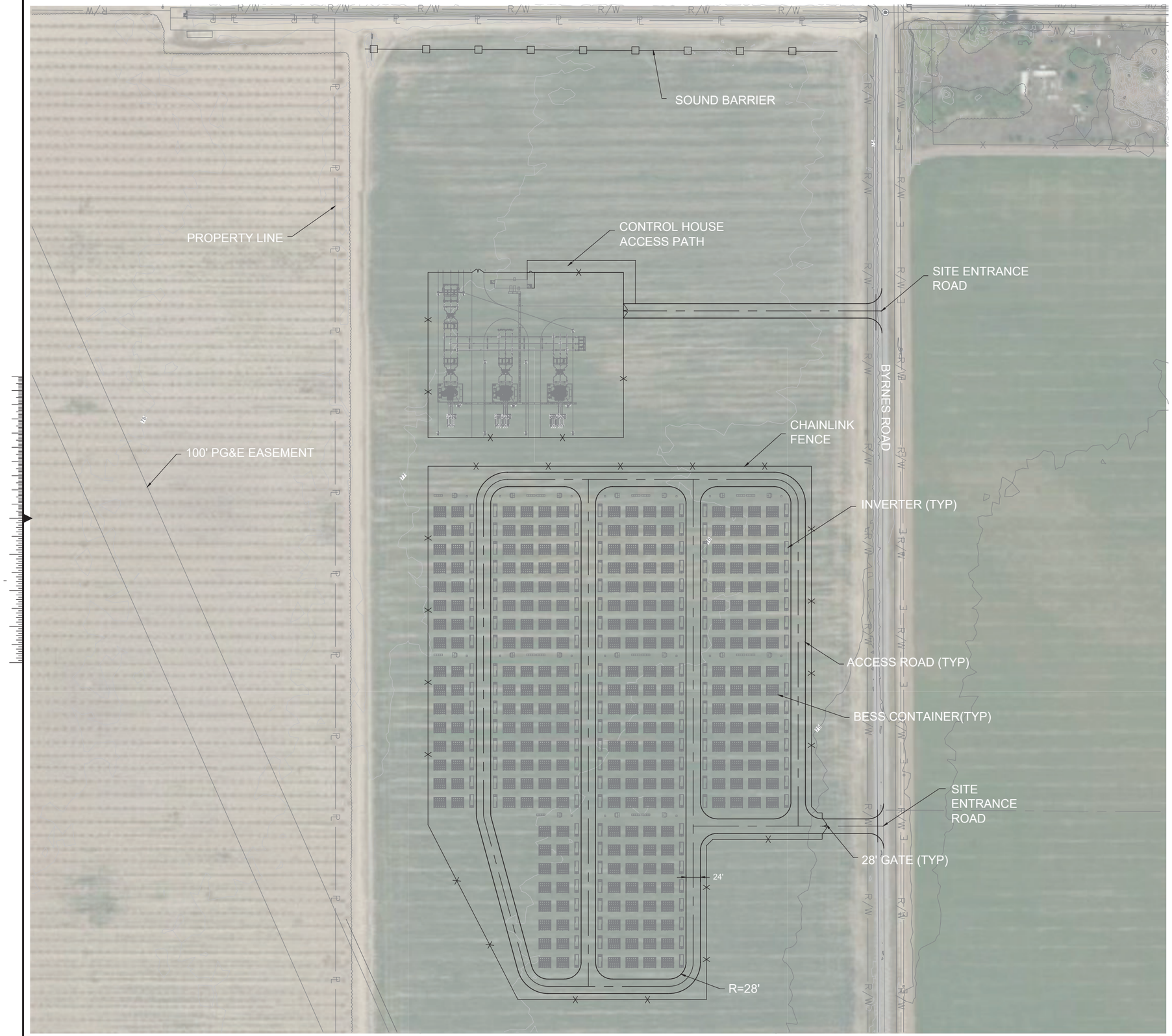
The BESS will include multiple self-contained, prefabricated enclosure units in a parallel configuration with spacing between each unit as required by the manufacturer. Each of the enclosure units will be approximately 9.5 feet tall, 8 feet wide, and 20 feet long. Batteries will be placed within the BESS yard on native compacted soil, gravel, and underground steel piles or concrete foundations.

The initial BESS installation will include 384 BESS enclosures at the "beginning of life" (BOL). As batteries degrade over time, additional batteries will be installed every 2 to 3 years to replenish the system and maintain an overall 300-MW output. At the "end of life" (EOL), the Project will include up to 544 BESS enclosures. The site plan accounts for this augmentation activity and depicts both the BOL and EOL BESS arrays (Figure 2-1).

The enclosure units will contain lithium-ion batteries stored on racking and there will be no internal open space available for entry or occupation. All battery racking will be fully accessible from the exterior of the enclosure via external doors. Each enclosure unit will be equipped with a TMS for regulating the temperature of the batteries. Power to the TMS will be provided through a connection to the onsite station service transformer, with connection lines installed above and/or below ground.

Each enclosure unit will have a fire rating in conformance with the local fire authority and the correlating fire code. Additionally, the proposed Project will use designs and equipment that have undergone Underwriters Laboratories (UL) 9540A testing and meet other applicable UL and National Fire Protection Association (NFPA) standards. Moreover, the Project will comply with applicable fire code and standards, such as NFPA 855, California Fire Code 1207, and UL 9540. Collectively, these standards require exclusive use of batteries that are UL certified and built-in fail safes designed specifically to prevent thermal runaway and the spread of fire.

Only batteries that are UL certified and that include built-in fail safes designed specifically to prevent thermal runaway and the spread of fire will be used. This includes UL 9540A testing to validate their ability to limit a thermal runaway event. Additionally, the Project will adhere to the latest applicable codes, including NFPA 855. Continuous monitoring and detection systems will be included to meet California and Solano County fire code standards. Batteries are remotely operated and will be shut down automatically if abnormal conditions occur. Please see the design basis and major equipment specifications documents in Appendix 2-A for a complete listing of laws, ordinances, regulations, and standards (LORS) incorporated into the facility design.



NextEra Energy
Corby Battery
Energy Storage Project

Solano County, CA

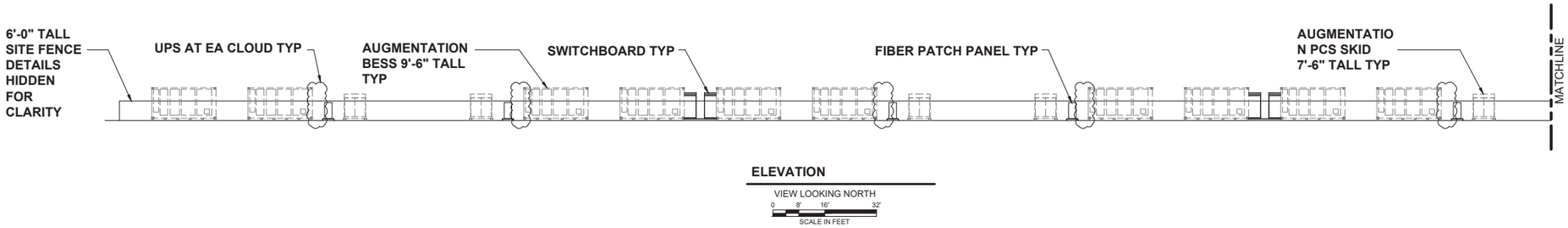
Figure 2-1
Site Plan

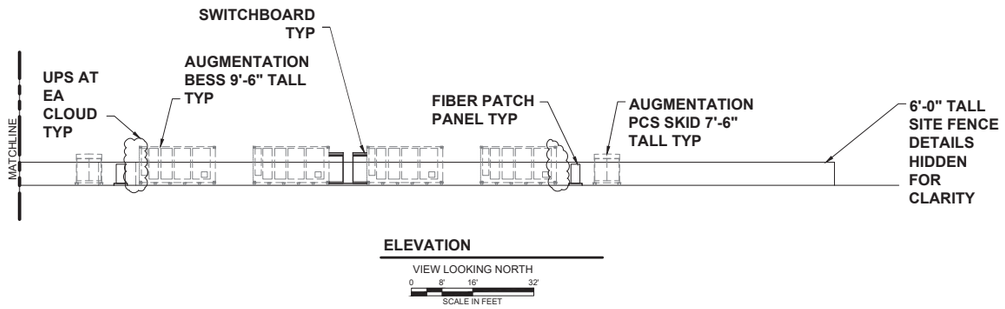
Source

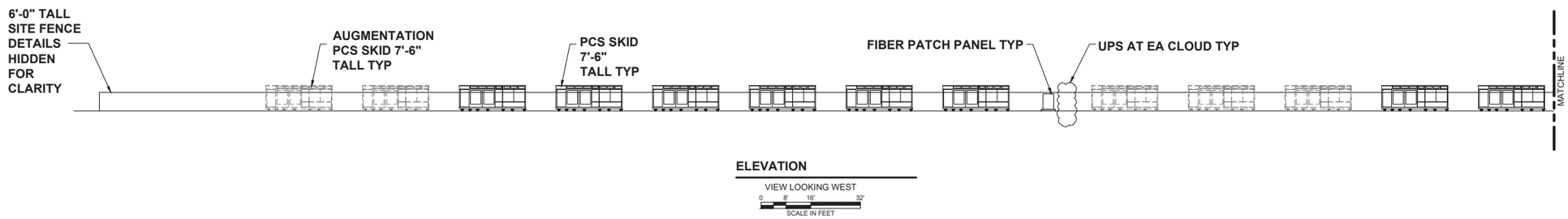
Burns & McDonnell Corby BESS Site Plan Drawing BCR-C-003 rev. B

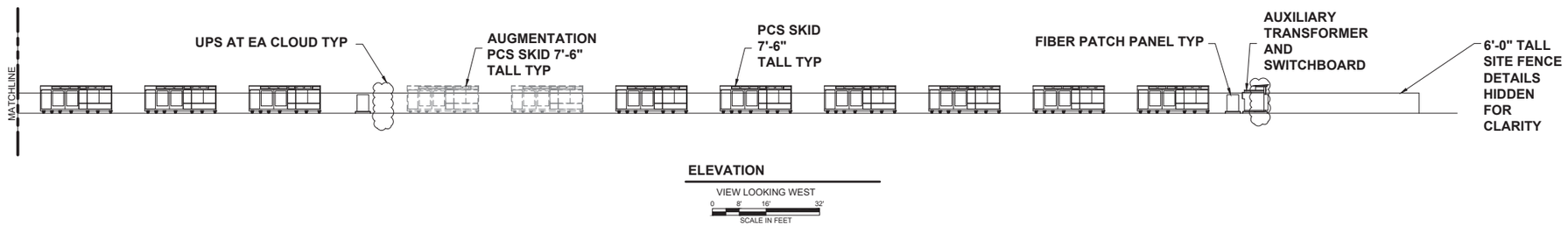
NOT FOR CONSTRUCTION

TETRA TECH









NextEra Energy Corby Battery Energy Storage Project

Solano County, CA

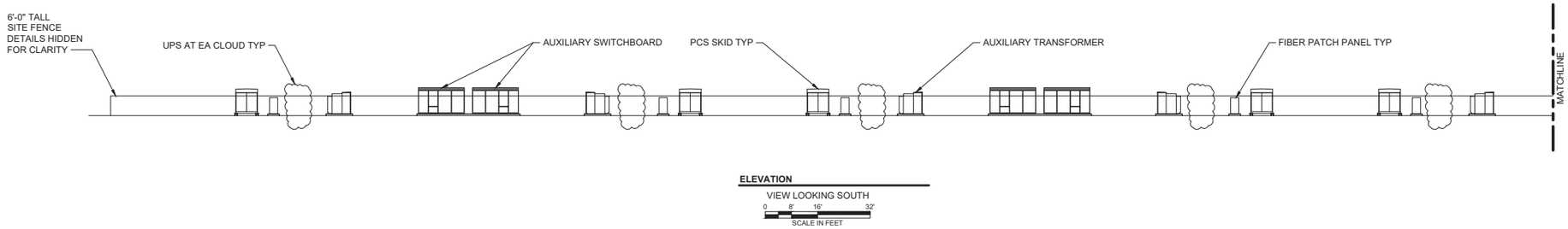
Figure 2-2a Elevation Views Looking North and West

SOURCE

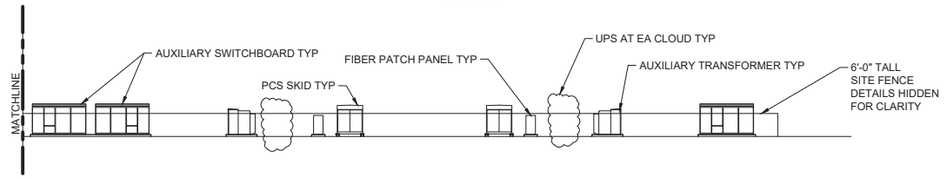
Burns & McDonnell Corby BESS Site Plan Drawing BCR-EXS-101 rev. A

NOT FOR CONSTRUCTION

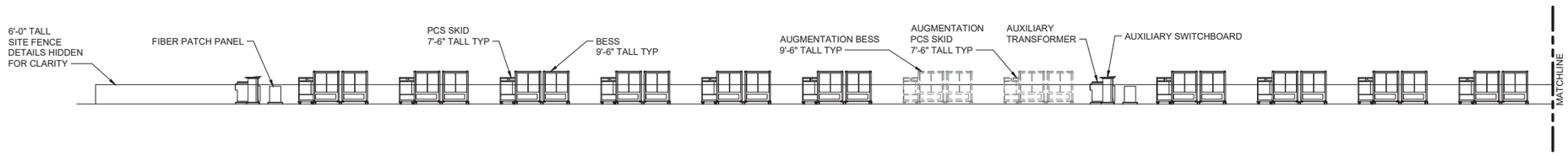
TETRA TECH



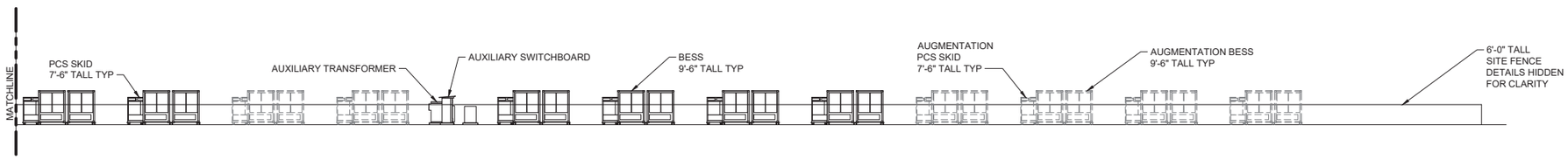
ELEVATION
VIEW LOOKING SOUTH
0 8' 16' 32'
SCALE IN FEET



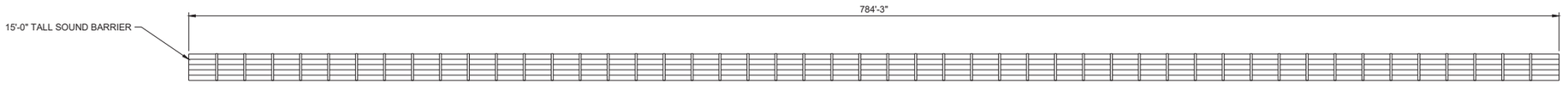
ELEVATION
VIEW LOOKING SOUTH
0 8' 16' 32'
SCALE IN FEET



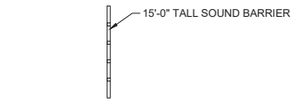
ELEVATION
VIEW LOOKING EAST
0 8' 16' 32'
SCALE IN FEET



ELEVATION
VIEW LOOKING EAST
0 8' 16' 32'
SCALE IN FEET



ELEVATION
VIEW LOOKING SOUTH
0 30' 60'
SCALE IN FEET



ELEVATION
VIEW LOOKING EAST
0 10' 20'
SCALE IN FEET

NextEra Energy
Corby Battery
Energy Storage Project

Solano County, CA

Figure 2-2b
Elevation Views Looking South and East

Source

Burns & McDonnell Corby BESS Site Plan Drawing BCR-EXS-102

NOT FOR CONSTRUCTION

TETRA TECH

2.3.2.2 Inverters

The Project will install inverters with the BESS yards adjacent to the battery enclosures. The inverters convert between alternating current, which is used by the transmission grid, and direct current, which is used to charge and discharge the batteries. As depicted on Figure 2-1, the Project will initially include 96 inverters (BOL) and, following full augmentation, will be expanded to 136 inverters at EOL.

The Project will only use industry standard equipment that is recognized both nationally and internationally. These inverters are non-occupiable, standalone units that operate in all conditions. They operate in charge and discharge modes, are UL listed for bidirectional use, and are monitored and controlled remotely. There will be onsite disconnects in case of an emergency or unscheduled maintenance. In case of grid disturbance on PG&E's side, the inverters will not operate until they are remotely turned on or the grid instability is stabilized for a length of time. In discharge mode, the inverters will be turned on remotely and controlled by internal circuitry and power control software at the BESS. They are designed to last more than 30 years.

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

2.3.2.3 Project Substation

Underground or aboveground collector lines will transmit energy between the Project substation and the inverters within the BESS yards. The proposed substation will host 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. The associated transformers, control enclosure, and microwave tower will be located within the onsite substation area.

The Project substation will include three generator step-up transformers to step up the voltage of electricity from 34.5 kV to 230 kV for transmission to the Vaca-Dixon Substation or step down the voltage for storage in the BESS batteries.

Underground wires and cabling will run from the battery cable collection box (inside the structure or from enclosures) to a concrete pad housing the electrical equipment listed previously. All outside electrical equipment will be housed in the appropriate National Electrical Manufacturers Association rated enclosures and screened from view on all sides. Please see Section 3.2.3 of this Application for a more detailed description of electrical components and one-line diagram for the Project substation.

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

2.3.2.4 Operations and Maintenance Facility

The Project will include operations and maintenance (O&M) equipment that will be stored in up to eight conex storage containers, each approximately 10 feet by 20 feet in size placed in open areas within the fenced BESS yard. Operational staff will perform periodic inspections and maintenance as needed using the containers for storage of materials, equipment and other O&M work as needed. Enclosures used to store hazardous materials will be inspected regularly for any signs of failure or leakage.

2.3.2.5 Ancillary Facilities

Site Access and Maintenance Roads

Site access will be provided via new connections to Byrnes Road adjacent to the eastern Project site boundary (see Figure 2-1). Internal site maintenance roads will also be installed to allow access throughout the Project site during O&M. Maintenance roads will be placed between groups of BESS enclosures at sufficient frequencies to allow for routine maintenance and emergency access. All roads will be designed to comply with the superseding fire codes, measuring at least 20 feet wide with adequate turnarounds, graveled (or potentially asphalt paved depending upon final design), extending to within 150 feet of the farthest BESS container, and will be sufficient for local fire department and California Department of Forestry and Fire Prevention (or CAL FIRE) access.

Lighting

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

Perimeter Fence

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

Sound Barrier

A sound barrier will be used to reduce the sound levels at the nearby residential receivers north of the Project site. An approximately 15-foot-high by 785-foot-long sound barrier will be installed along the northern edge of the Project parcel to attenuate sound levels (see Figure 2-1). The proposed sound barrier will be a post and pre-cast panel system with a gray textured finish. Additional information is presented in Section 4.13, *Noise* and Appendix 4.13-B.

Signage

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

Site Drainage

The Project design incorporates onsite stormwater facilities, including a perimeter ditch and two retention basins to control facility runoff and ensure that future peak discharges from the Project site do not exceed the peak discharges for the 100-year, 24-hour storm under current conditions per Solano County's standards. The retention basins will be located east of the Project substation and southeast of the BESS array within the Project parcel, and onsite stormwater flows will be conveyed to the proposed retention basins via overland flow and a perimeter ditch. A preliminary grading plan showing site drainage is provided in Appendix 2-B. A pre- and post-construction hydrology and hydraulics analysis is provided in Appendix 4.10-A.

With the exception of equipment enclosures and potentially asphalt-paved site maintenance roads, most of the Project site will be surfaced with crushed rock, allowing infiltration.

Refer to Section 4.10, *Hydrology/Water Quality* for additional site drainage information.

Landscaping

A landscape strip will be planted along Kilkenny Road and Byrnes Road, as requested by the Solano County Planning Services Division in their preliminary Project review in 2023 (see Appendix 4.11-A). A 36-foot-wide landscape buffer comprising drought-tolerant and native vegetation will be used, and all landscaping will comply with the California Department of Water Resources Water Efficient Landscape requirements. Refer to Section 4.1, *Aesthetics,* and Appendix 4.1-B, *Landscape Plan,* for additional landscaping information.

2.3.3 Water Supply and Use

No water will be required for Project operations. BESS equipment will not require water supply. The Project will not have an O&M facility, will be operated remotely, and will not have permanent sanitary facilities. Temporary sanitary facilities will be procured when required to support onsite maintenance activities.

Limited water will be required for construction and operations. As discussed further in Section 2.4.5, up to 30 acre-feet 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 acre-feet) 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.

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

1. **Solano Irrigation District** – SID, the local water purveyor for the Project site and surrounding area, may provide required water either via their irrigation canal abutting the Project site or via their pressurized system depending on time of year, availability, and feasibility of pumping directly from the canal. 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.

2. **On-site groundwater well –** 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. Additional information is presented in Section 4.10, *Hydrology/Water Quality* and Appendix 4.10-B.

2.3.4 Waste Management

During operations, 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 O&M activities and will be disposed of with standard refuse collection at a regional O&M facility.

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

Any additional hazardous waste or electronic waste generated during operations 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.

2.3.5 Management of Hazardous Materials

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

Other 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.

2.3.6 Fire Protection

Lithium-ion batteries are inherently safe and stable, and there are thousands of BESS facilities safely operating around the world. Battery storage facilities include both onsite and offsite monitoring systems, as well as fire detection systems that meet or exceed industry standards. The Project will deploy a container-based system design to limit the likelihood of any type of fire event impacting

more than a small portion of the site, due to physical separation between individual battery containers. The Applicant will coordinate and train with local first responders and fire officials to prepare for a coordinated response in the unlikely scenario of a thermal event.

Each BESS unit will have a fire rating in conformance with local fire authority and Solano County standards, via compliance with the 2022 California Fire Code. The Project's fire safety system design will comply with Section 1207 Electrical Energy Storage Systems, which adopts the NFPA's Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). A representative fire protection system schematic is provided in Appendix 2-D. Per NFPA 855, the batteries used in this Project will be manufactured and tested in accordance with UL 9540A, the Standard for Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems. This test method was developed to minimize the risk of thermal runaway to address safety concerns about battery storage equipment raised by fire departments and building officials in the United States. A nationally recognized testing laboratory independently tests equipment for compliance with the latest battery energy storage safety code requirements. Compliance with these standards and certification includes a Battery Management System design that detects abnormal conditions, including but not limited to high temperatures at the battery cell or battery module level, and automatically shuts down the battery rack. Furthermore, installation of battery units will follow manufacturer specifications for the spacing of batteries and clearance distances to further prevent a thermal runaway event and propagation. Each unit will also be equipped with TMSs for thermal management of the batteries. Power to the TMS and lighting will be provided through a connection to the onsite station service transformer with connection lines installed above and/or below ground. Enclosures housing batteries are designed with adequate deflagration control measures and will also be equipped with hydrogen detection that will alert the remote monitoring facility that the sensor has been activated. See Section 4.9.3.1 in Section 4.9, *Hazards and Hazardous Materials*, for additional detail on fire safety standard compliance and testing.

2.3.6.1 Impact, Puncture, or Other Mechanical Damage

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

2.3.6.2 Overcharging

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

2.3.6.3 Overheating

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

2.3.6.4 Short Circuits

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

With the above controls, a BESS facility is safe to operate and will quickly neutralize potentially unsafe battery conditions to prevent, detect, and minimize the impact of a thermal event. The BESS enclosures will be listed under UL 9540 (Standard for Energy Storage Systems and Equipment). Inverters will be listed under UL 1741 (Standard for Inverters, Converters, Controllers, and Interconnection System Equipment for Use with Distributed Energy Resources). The battery cells and modules will be listed under UL 1973 (Standard for Batteries for Use in Stationary and Motive Auxiliary Power Applications). The battery enclosures will only include batteries and associated protection and control equipment that include built-in fail safes designed specifically to prevent thermal runaway and propagation.

2.3.7 Facility Operation

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 SCADA 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.

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.

2.4 Project Construction[11]

2.4.1 Grading and Site Preparation[12]

Site grading will be required for the construction of the Project substation, BESS 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 to achieve 0.5 percent surface

[11] Appendix B (b) (1) (C)
[12] Appendix B (g) (15) (A) (iii)

slope for site drainage purposes. Fill material will be sourced from a permitted commercial facility within 50 miles of the Project site. A preliminary grading plan is provided in Appendix 2-B.

Limited excavation activities will be required for trenching or boring for utilities, building structure foundations, and installing footings where required for structural safety. Most excavation activities will be no greater than approximately 4 to 6 feet in depth, including substation equipment and ground grid/cable trenching. The underground gen-tie trenching will be approximately 7 to 10 feet deep. Overhead gen-tie pole foundations, up to 8 feet in diameter, may extend as deep as approximately 35 feet depending on site-specific soil conditions.[13] At locations where gen-tie poles will be installed, minor cuts may be required where the foundation will be driven.

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

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

2.4.2 Construction Workforce

Project construction will include site preparation, grading, battery/container installation, substation installation, gen-tie foundation and tower erection, gen-tie stringing and pulling, and commissioning. These activities are expected to require an average workforce of approximately 78 workers over the 14-month construction period, with a peak workforce of approximately 131 workers during the seventh month (see Table 2-1).

[13] Appendix B (b)(1)(C)

Table 2-1. Construction Workforce

Workforce Type	Month 1	Month 2	Month 3	Month 4	Month 5	Month 6	Month 7	Month 8	Month 9	Month 10	Month 11	Month 12	Month 13	Month 14
BESS	**Construction**											**Commissioning**		
Construction Laborer	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 Managers/Support	4	8	11	12	16	20	24	20	16	15	24	24	24	16
Gen-tie[1]														
Construction Laborer							12	12	12	12				
Carpenters							2	2	2	2				
Cement Finishers							2	2	2	2				
Electricians							10	10	10	10				
Equipment Operators							5	5	5	5				
Pile Drivers							0	0	0	0				
Rodmen/Ironworkers							2	2	2	2				
Truck Drivers							2	2	2	2				
Project Managers/Support							5	5	5	5				
Total	**8**	**49**	**52**	**61**	**71**	**78**	**131**	**115**	**103**	**100**	**97**	**80**	**80**	**64**

1/ Gen-tie workforce estimate Includes underground and overhead components including PG&E gen-tie and New Corby Bay equipment installation activities.

2.4.3 Construction Equipment

Construction equipment will include scrapers, graders, water trucks, dozers, and compaction equipment (see Table 2-2). The enclosure modules will be offloaded and installed using cranes, boom trucks, forklifts, rubber-tired loaders, rubber-tired backhoes, and other small- to medium-sized construction equipment, as needed. Construction equipment will be delivered to the site on low-bed trucks unless the equipment can be driven to the site (e.g., using boom trucks).

Table 2-2. Typical Construction Stages and Assumed Equipment

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

2.4.4 Construction Schedule and Activities

Construction of the Project is anticipated to be completed in approximately 14 months, including site preparation, grading, BESS and substation installation, gen-tie construction, and Project commissioning. 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. Project construction will typically include a total of five shifts per week (Monday through Friday). Overtime and weekend work will be used only as necessary to meet scheduled milestones or accelerate schedule and will comply with applicable California labor laws and applicable Solano County Code construction noise requirements (see Section 4.7, *Geology, Soils, and Paleontological Resources*).

Typical construction steps are as follows and are described further below, and Table 2-3 lists typical construction stages and durations:

- Site survey activities, including demarcation of construction areas and any sensitive resources needing protection;
- Erosion and sediment control measure installation;
- Site preparation, including vegetation removal, access road and temporary construction staging area development;
- Site grading;
- Fencing installation;

- BESS civil, mechanical, and electrical construction;
- Gen-tie site preparation, including orchard removal;
- Substation installation;
- Gen-tie foundation and tower erection;
- Underground gen-tie construction;
- Gen-tie stringing and pulling;
- BESS commissioning; and
- Final site cleanup and restoration.

Table 2-3. Typical Construction Stages and Duration

Task	Duration[1/]
Site Preparation	2 months
Grading	3 months
BESS Civil/Mechanical/Electrical Installation	7 months
Gen-tie Site Preparation	2 weeks
Substation Installation	6 months
Gen-tie Foundation and Tower Erection and Underground Installation	6 months
Generation Tie Stringing and Pulling	3 months
Commissioning	3 months

1/ Tasks will overlap; therefore, durations are not cumulative.

2.4.4.1 Demarcation of Sensitive Resources

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

2.4.4.2 Temporary Construction Laydown Areas

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 Project site. Construction laydown areas will be located within open areas on the northern and southern portions of the Project parcel 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 (APN 0133-060-020). The construction and gen-tie laydown areas are depicted on Figure 1-3.

2.4.4.3 Road Infrastructure

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

2.4.4.4 Erosion and Sediment Control

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

2.4.4.5 Project Substation Installation

Typical construction steps include:

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

2.4.4.6 BESS Installation

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

2.4.4.7 Power Conversion System Installation

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

2.4.4.8 Inspection and Startup Testing

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

2.4.4.9 Final Cleanup and Restoration

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

2.4.5 Construction Water and Wastewater Needs

Project construction is expected to require approximately 14 months, including testing and commissioning prior to operation. During construction, water will be required for common construction-related purposes, including dust suppression, soil compaction, and grading. Temporary onsite water tanks and water trucks will provide water for construction needs. Drinking water and temporary sanitation facilities will be delivered to the Project site. Bottled drinking water will be provided for construction workers.

The most significant water usage will occur during heavy earthwork site preparation and grading, occurring over the first few months of construction. Up to 30 acre-feet will be needed during construction, primarily during the grading phase and prior to commissioning. See Section 2.3.3 and Section 4.10, *Hydrology/Water Quality,* for additional information.

As discussed in Section 2.3.3, construction water will either be obtained from SID (from an adjacent irrigation canal or trucked in) or from a new onsite groundwater well. Development of an onsite well would involve well drilling, casing installation, and well development and testing activities. During drilling and well construction, soil cuttings, drilling mud, and groundwater will be generated. Solid wastes and muddy water would be contained in roll-off bins and transported to an appropriate landfill for disposal. Groundwater would be contained onsite within temporary berms to facilitate infiltration and would not be discharged offsite. Additional information related to groundwater well construction is provided in Appendix 4.10-B.

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.

2.4.6 Construction Solid Waste

Most 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 accordance with the California Green Building Standards Code (Title 24, California Code of Regulations Part 11), which establishes standards for construction and demolition waste management and recycling or salvage of a minimum of 65 percent of nonhazardous construction and demolition waste. Non-recyclable construction waste will be placed into commercial trash dumpsters located onsite. Dumpsters will be collected as needed by a commercial service and delivered to a landfill. Construction will generate an average of approximately 80 cubic yards of nonhazardous solid waste per week over the 14-month construction period. Approximately 650 tons of biomass will be generated during orchard removal ahead of gen-tie construction. A portion of the chipped biomass may be spread onsite; however, for the purposes of the environmental analyses herein it was assumed that 100 percent of this waste will be hauled off for disposal at a commercial composting facility no more than 50 miles from the Project site.

2.4.7 Construction Hazardous Materials

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 transported to appropriate regulated waste handling facilities for disposal or recycling.

2.4.8 Construction Traffic

Delivery of material and supplies will reach the Project site through on-road truck delivery by way of I-80 to Weber Road and then to Byrnes Road. Most truck deliveries will be for the battery enclosures, inverters, transformers installation, substation materials, and any concrete or aggregate material that may be required for foundations. These loads will typically be limited to 50 tons, or 100,000 pounds, with a typical cargo load of approximately 25 tons, or 50,000 pounds. The heaviest delivery loads to the site will be for the step-up transformer, which may be close to 160,000 pounds. Project personnel will also use these routes each day during the construction phase. Access to the Project site will be provided via the new access points along Byrnes Road, adjacent to the eastern Project site boundary. The Project has a construction schedule of approximately 14 months. Total trip generation will vary depending on the specific phase and construction stage as will each type of trip. The peak of construction activity is anticipated to occur during the seventh month of construction, with an estimated maximum of 678 daily trips, with 181 trips in the morning peak hour and 181 trips in the evening peak hour.

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

Additional information related to construction traffic is provided in Section 4.17, *Transportation*.

2.5 Engineering[14]

This section, together with the engineering appendixes and Section 3.0, *Electric Transmission*, presents information concerning the design and engineering of the Project. LORS applicable to engineering disciplines are also provided.

2.5.1 Facility Design[15, 16]

Summary descriptions of the design criteria for all of the major engineering disciplines are included in Appendix 2-A, *Design Basis and Major Equipment Specifications*. Appendix 2-E contains a Preliminary Geotechnical Report for the Project based on borings taken at the Project site.

[14] Appendix B (i) (1) (A)
[15] Appendix B (h) (1) (A) through (D) (ii) and Appendix B (h) (3) (ii)
[16] Appendix B (h) (1) (D) (viii) and (ix)

Design and engineering information and data for the following systems are found in the following subsections of this Application for Certification:

- Batteries and battery enclosures (see Section 2.3.2.1);
- Inverters (see Section 2.3.2.2);
- Project substation (see Sections 2.3.2.3 and 3.2.3); and
- Gen-tie (see Section 3.2, *Transmission Line Description, Design, and Operation*).

2.5.2 Facility Reliability[17]

The Project will utilize lithium-ion battery technology, renowned for its exceptional safety, ease of understanding, and high efficiency. Considered one of the most reliable energy storage methods available, lithium-ion technology boasts an extended lifespan and exhibits superior safety and stability characteristics.

In addition to the implementation of superior lithium-ion battery technology, unlike other power generation assets, batteries have no moving parts, significantly reducing the likelihood of outright failure and the need for routine maintenance-related planned outages. Moreover, the battery containers are designed to be modular, ensuring that if one unit fails within a container, the remaining units will continue to operate until the defective unit is replaced. This feature enables battery storage projects to maintain a high level of availability throughout the year.

While the probability of battery failure is low, it is important to acknowledge that capacity to charge and discharge diminishes over time. To address this, the Project incorporates augmentation space, allowing for an increase in the number of batteries and inverters.

2.5.3 Efficiency

The battery storage facility employs an efficient design approach, whereby multiple battery containers feed into a single inverter. By spacing the batteries closely together without sacrificing accessibility and incorporating other necessary site features, the facility minimizes its physical footprint. Unlike solar or wind projects of comparable size, which require significantly larger acreage, the 300 MW facility occupies a modest 16-acre area within a privately owned parcel. The round-trip efficiency of the battery storage Project is estimated to be approximately 84.6 percent, with significantly fewer losses as compared to other energy producing technologies. This estimate accounts for transmission and battery cycle losses as well as plant auxiliary loads.

Furthermore, the Project's strategic location in proximity to the Vaca-Dixon Substation minimizes the distance energy needs to travel for charging and discharging into the grid. This arrangement maximizes the round-trip efficiency of the Project, ensuring optimal utilization of the stored energy.

2.6 Facility Closure[18]

The proposed Project, including the BESS, inverters, Project substation, gen-tie lines, and ancillary facilities, will be decommissioned when the Project's life is over (anticipated to be approximately 30

[17] Appendix B (h) (3) (B), Appendix B (h) (3) (B) (i), and Appendix B (h) (3) (B) (ii)
[18] Appendix B (e) (1)

years). During decommissioning, most materials are anticipated to be recycled to the greatest extent practicable. For example, the degraded lithium-ion batteries may be recycled or repurposed; the steel or aluminum battery enclosures, with concrete foundations, can also be recycled; and metal scrap equipment and parts that do not have free-flowing oil will be sent for salvage. Any materials that cannot be recycled will be disposed of according to federal, state, and local regulations in place at the time of decommissioning.

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

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

Upon removal of the Project components, the site will be restored in accordance with an approved decommissioning plan. Since decommissioning activities will involve exposure and disturbance of soils, measures for erosion and sediment control will be implemented in accordance with a separate Stormwater Pollution Prevention Plan, which will be required for decommissioning.

2.7 PG&E Vaca-Dixon Substation Network Upgrades

To accommodate the interconnection of the Project and other future projects, PG&E is currently performing network upgrades that include grading, construction of concrete pads, and relocating existing structures within the Vaca-Dixon Substation. Three structures within the substation supporting the existing Vaca-Plainfield 60-kV transmission line will be relocated and designed to accommodate the equipment modifications at the substation described above and to cross under the proposed Corby 230-kV gen-tie line to allow for the appropriate separation of conductor between the lines. The structures will be replaced with single-circuit dead-end standard light duty steel poles, which will be guyed and direct-embedded, to support the 60-kV conductors. The network upgrade activities described above are all occurring in disturbed areas within the existing PG&E substation and are authorized by the California Public Utilities Commission pursuant to General Order 131(d) and therefore are not part of the Corby BESS Project and not evaluated in Section 4.0 of this application.

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

2.8 Project Design Measures

The Project will incorporate specified features into the design of the Project, referenced herein as Project Design (PD) Measures, to reduce and minimize Project impacts to less than significant levels. The PD Measures are included here in summary form as part of the Project description. During the California Energy Commission's review, it is anticipated that these PD Measures will be incorporated as enforceable Conditions of Certification.

PD AES-01: A landscape strip will be planted along Kilkenny Road and Byrnes Road. Drought-tolerant and native vegetation will be used, and all landscaping will comply with the California Department of Water Resources Water Efficient Landscape requirements. The vegetation will include trees, shrubs, and herbaceous ground cover.

PD AG-1: Prior to the issuance of building permits, the Project Applicant would secure at least 60.5 acres of agricultural mitigation land in order to meet the mitigation criteria outlined in the Solano County General Plan policies. The basic parameters of the required mitigation outlined in the County policies are as followed:

- Mitigation at a ratio of 1.5:1 (1.5 acres of farmland protected through mitigation for each acre of farmland converted).
- Mitigation within the same agricultural region [19] as the proposed development project.
- Mitigation lands of similar agricultural quality to the lands being converted.

Additionally, the Applicant will enter to into an Initial Screening Agreement with Solano Land Trust and will advance through Solano Land Trust's process ending in Acceptance and Execution of a mitigation agreement. Alternatively, if Solano County implements an agricultural mitigation program in the near future, or if other mitigation providers become available, the Applicant may elect to participate in those programs, if approved by CEC.

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.

[19] The Project is located within the Elmira/Maine Prairie agricultural region in the Solano County General Plan. https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=6493

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.

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.

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 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[20]: 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

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

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 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).

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**.

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.

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).

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.

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.

PD TRANS-01: A construction traffic management plan (TMP) will be developed and implemented prior to Project construction.

2.9 References

SID (Solano Irrigation District). 2024. Construction Water. Available online at: https://www.sidwater.org/175/Construction-Water (accessed August 2024).

3.0 ELECTRICAL TRANSMISSION

3.1 Introduction

This section describes the proposed transmission interconnection between the Corby Battery Energy Storage System Project (Project) and Pacific Gas and Electric's (PG&E) Vaca-Dixon Substation, as well as the potential effects that operation of the Project may have on the flow of electrical power in the region. The following sections describe:

- Proposed overhead and underground interconnection alignment between the Project and Vaca-Dixon Substation;
- Transmission line construction methods and typical equipment;
- Interconnection studies completed for the Project;
- Potential impacts of the interconnection on the existing electric transmission grid;
- Potential nuisances (e.g., electrical effects, communication interference, aviation safety, fire hazards); and
- Applicable laws, ordinances, regulations, and standards (LORS).

The Project will be located in unincorporated Solano County, on a 40.3-acre private parcel located approximately 0.65 mile southeast of the Vaca-Dixon Substation (Project site). This location was selected in part due to its proximity to the large substation to minimize the required transmission interconnection distance from the PG&E-defined Point of Interconnection (POI). The Project will interconnect via a new 230-kilovolt (kV) overhead and underground generation tie (gen-tie) transmission line totaling approximately 1.1 miles in length.

Effective January 1, 2016, tapping a transmission line on PG&E-owned lines for new load and generation interconnections is not permitted on the PG&E system for 100 kV and above. The required method of interconnecting new load/generation is via a new or existing substation. Effective January 1, 2019, tapping transmission lines owned, operated, and maintained by a third party is restricted, and exceptions may or may not be allowed upon review of standby load agreements being served through non-PG&E facilities and installation of PG&E interconnection requirements required to safely and reliably interconnect the Project (PG&E 2022). As a result, the proposed gen-tie line was not designed, planned, or routed to meet transmission requirements created by other generating facilities.[1]

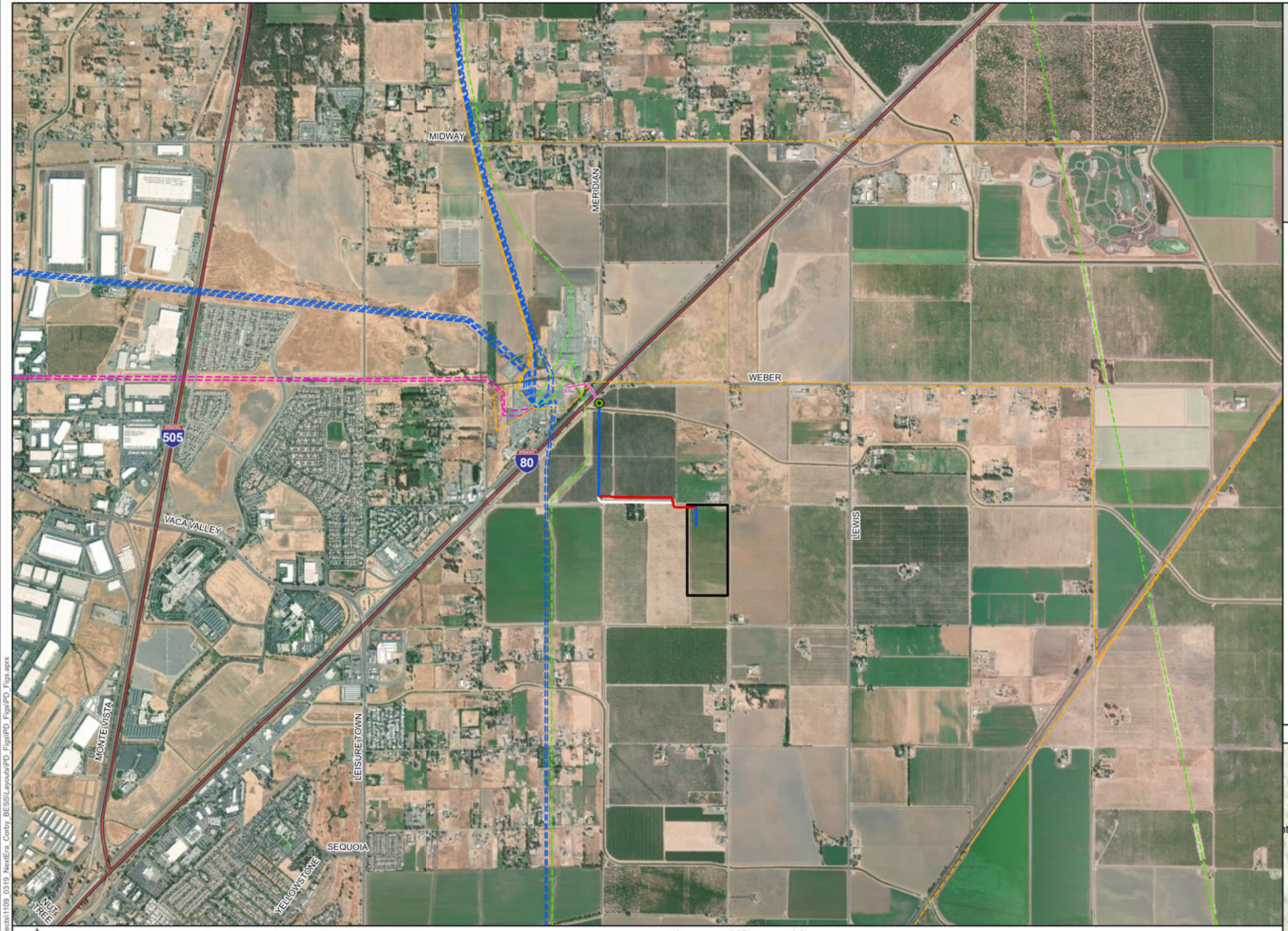
Figure 3-1 displays the proposed transmission line route as well as existing transmission lines and land uses in the vicinity of the Project site.[2]

[1] Appendix B (h) (2) (B)
[2] Appendix B (b) (2) (A)

NextEra Energy Corby Battery Energy Storage System Project

Figure 3-1 Existing and Proposed Transmission Lines

Solano County, CA



- Point of Change of Ownership

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)

Existing Transmission Lines

- Less than 100 kV
- 100 - 161 kV
- 220 - 287 kV
- 500 kV
- 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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3.2 Transmission Lines Description, Design, and Operation[3]

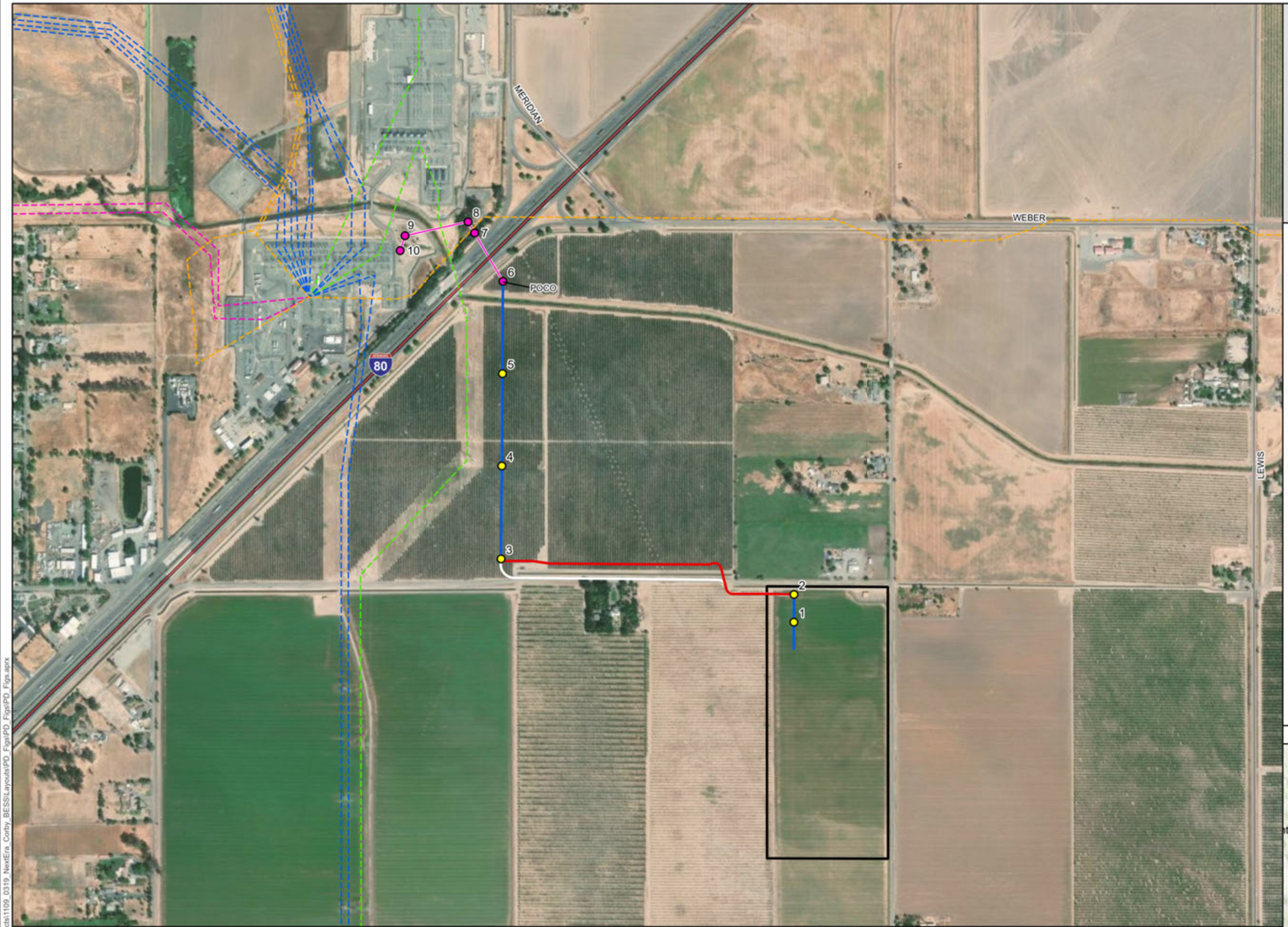
The Project will be connected to the electric transmission grid via a new, approximately 1.1-mile-long, single-circuit, three-phase 230-kV gen-tie line. The Applicant will construct approximately 0.9 mile and PG&E will construct approximately 0.2 mile of the gen-tie line. The gen-tie line will include both overhead and underground segments as described in the following subsections. 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 or within the City of Vacaville road right-of-way. The overhead portions will include two structures on the Project site, four structures between Kilkenny Road and Interstate 80 (I-80) on private land owned by the Applicant, and up to four structures north of I-80 on PG&E's Vaca-Dixon Substation property, for a total of up to 10 overhead gen-tie structures with structure heights ranging from approximately 90 to 130 feet above ground level.

The first proposed overhead alignment will begin at the Project substation and extend north for approximately 390 feet, at which point the overhead line will be transitioned underground and will either cross Kilkenny Road and the Solano Irrigation District (SID) canal before turning west and parallelling Kilkenny Road for a total underground distance of approximately 2,320 feet (Underground Route Option #1), or will be located within the City of Vacaville road right-of-way for a total underground distance of approximately 2,270 feet (Underground Route Option #2). At the end of the underground sections, the gen-tie line will be transitioned to be overhead and would extend north approximately 2,020 feet until it reaches the point of change of ownership (POCO) at Structure 6. After the POCO, the line will continue to the northwest across I-80, then continue west and southwest before terminating at the New Corby Bay within the Vaca-Dixon Substation for a distance of approximately 1,110 feet. The gen-tie line and structures starting at the POCO and continuing to Vaca-Dixon Substation will be constructed, owned, and operated by PG&E.[4]

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

Figure 3-2 displays the proposed gen-tie line alignment between the Project and Vaca-Dixon Substation. No existing overhead or underground transmission lines will be affected by the Project.

[3] Appendix B (a) (1) (A), Appendix B (b) (2) (C), Appendix B (g) (18) (A)
[4] Following construction, ownership of the POCO structure will be transferred from PG&E to the Applicant, whereas the gen-tie line and structures between the POCO and Vaca-Dixon Substation will be owned and operated by PG&E.



NextEra Energy
Corby Battery Energy Storage System Project

Figure 3-2
Gen-tie Details

Solano County, CA

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

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

Existing Transmission Lines
- Less than 100 kV
- 100 - 161 kV
- 220 - 287 kV
- 500 kV

Transportation
- Interstate Highway
- Road

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.aprx

3.2.1 Overhead Transmission Line Characteristics[5]

As previously noted, the Project location was selected in the immediate vicinity of the interconnecting substation to minimize transmission interconnection length and associated constraints. The gen-tie line will be constructed in a partially overhead and partially underground position from the Project's substation to Vaca-Dixon Substation. The proposed overhead gen-tie line will include a single-circuit, three-phase, 230-kV transmission line of three aluminum core, steel-supported (ACSS), 1272-kcmil[6] Bittern conductors suspended via braced post insulators on approximately 90- to 130-foot-tall steel poles; however, H-Frames or 3-pole tubular steel poles may also be used at the POCO or take-off from the Project substation as determined during final Project design. These would be located on Applicant-owned parcels or PG&E Vaca-Dixon Substation parcels. One level of optical ground wire will also be attached to the structures. Figure 3-3 displays a typical overhead electric transmission structure and conductor configuration.

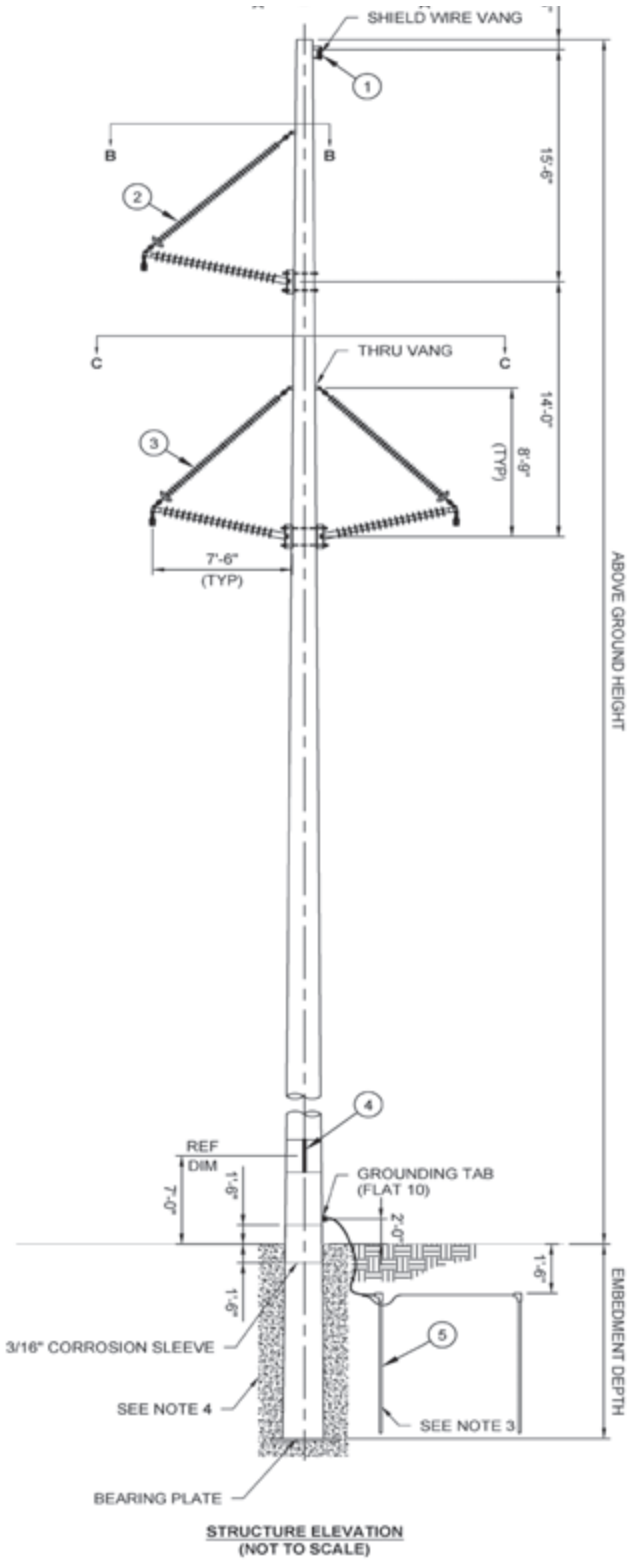
The redundant fiber optic cable pathway is anticipated to be installed on wood poles that are approximately 40 to 70 feet tall and installed parallel to but slightly offset from the gen-tie line. This redundant fiber optic cable pathway will be installed in the same construction impact area and within the same Applicant-owned parcels and PG&E Vaca-Dixon Substation parcels.

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

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

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

[5] Appendix B (h) (2) (A), Appendix B (b) (2) (D)
[6] In the North American electrical industry, conductors sizes are generally identified by the area in thousands of circular mils (kcmil), where 1 mil is 1/1000 inch and 1 kcmil = 0.5067 square millimeters. A circular mil is the area of a wire 1 mil in diameter.



STRUCTURE ELEVATION
(NOT TO SCALE)

PRELIMINARY
NOT FOR CONSTRUCTION

TETRA TECH

Source: Burns McDonnell Drawing BCR-01104SH01

NextEra Energy
Corby Battery Energy
Storage Project

Figure 3-3: Typical Overhead Electrical Transmission Structure

3.2.2 Underground Transmission Line Characteristics

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

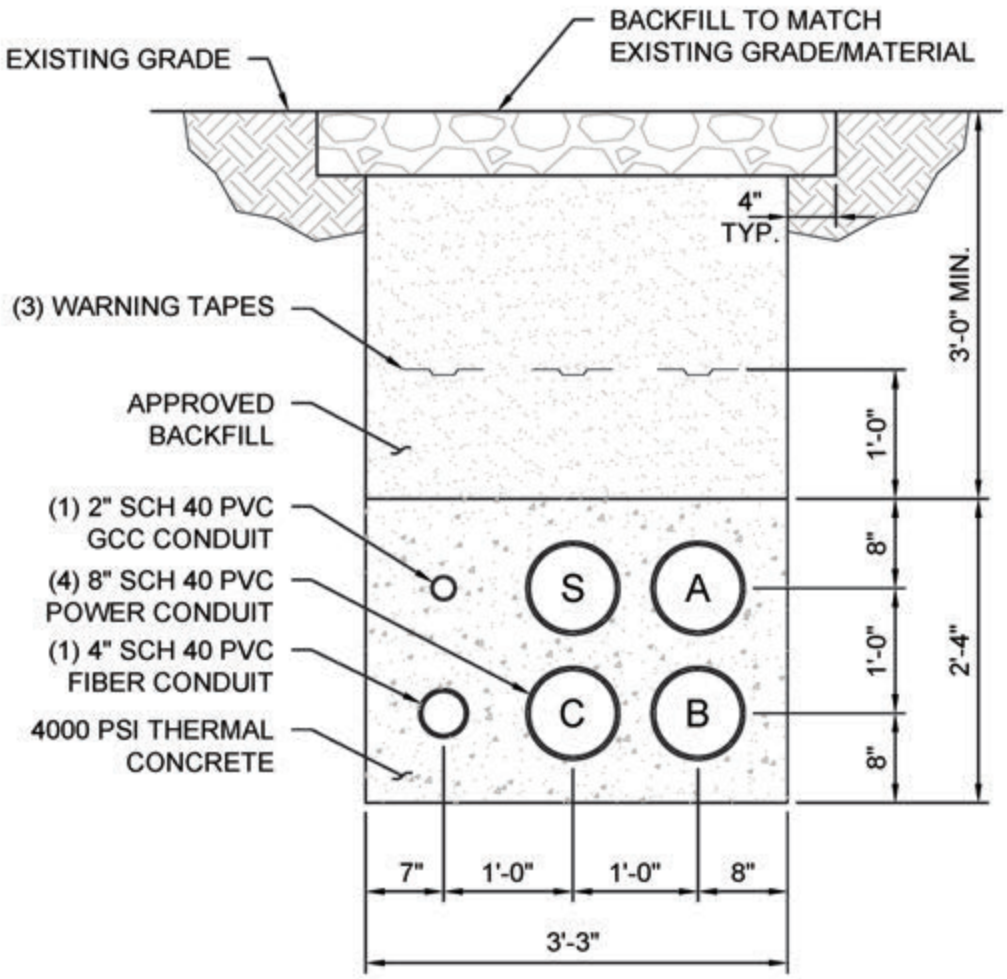
Underground Route Option #1 will be installed between Structures 2 and 3 in a concrete duct bank along with trenchless crossings under Kilkenny Road, the SID canal, PG&E gas pipelines, and other underground constraints. The duct bank will be approximately 4 feet wide and 3 feet deep and will house six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

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

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

3.2.3 Project Substation Characteristics

The Project substation will include two 230/34.5/13.8-kV transformers; one 241.5/34.5/13.8-kV transformer; four 2,000-ampere (A), 230-kV gas circuit breakers; and five 2,000-A, 34.5-kV vacuum circuit breakers, along with buses, switches, surge arresters, and other typical substation equipment. The circuit breakers will have an interrupting rating of at least 40 kiloamperes. A diagram depicting anticipated substation equipment, positioning, and elevations is included as Figure 3-5. A preliminary one-line diagram of the Project substation with equipment ratings is included as Figure 3-6. The proposed one-line diagram of the improvements that will take place within the Vaca-Dixon Substation is provided in Figure 1-2 of the Phase II Interconnection Study (Confidential Appendix 3-A).



TYPICAL DUCT BANK WITH FIBER DUCT

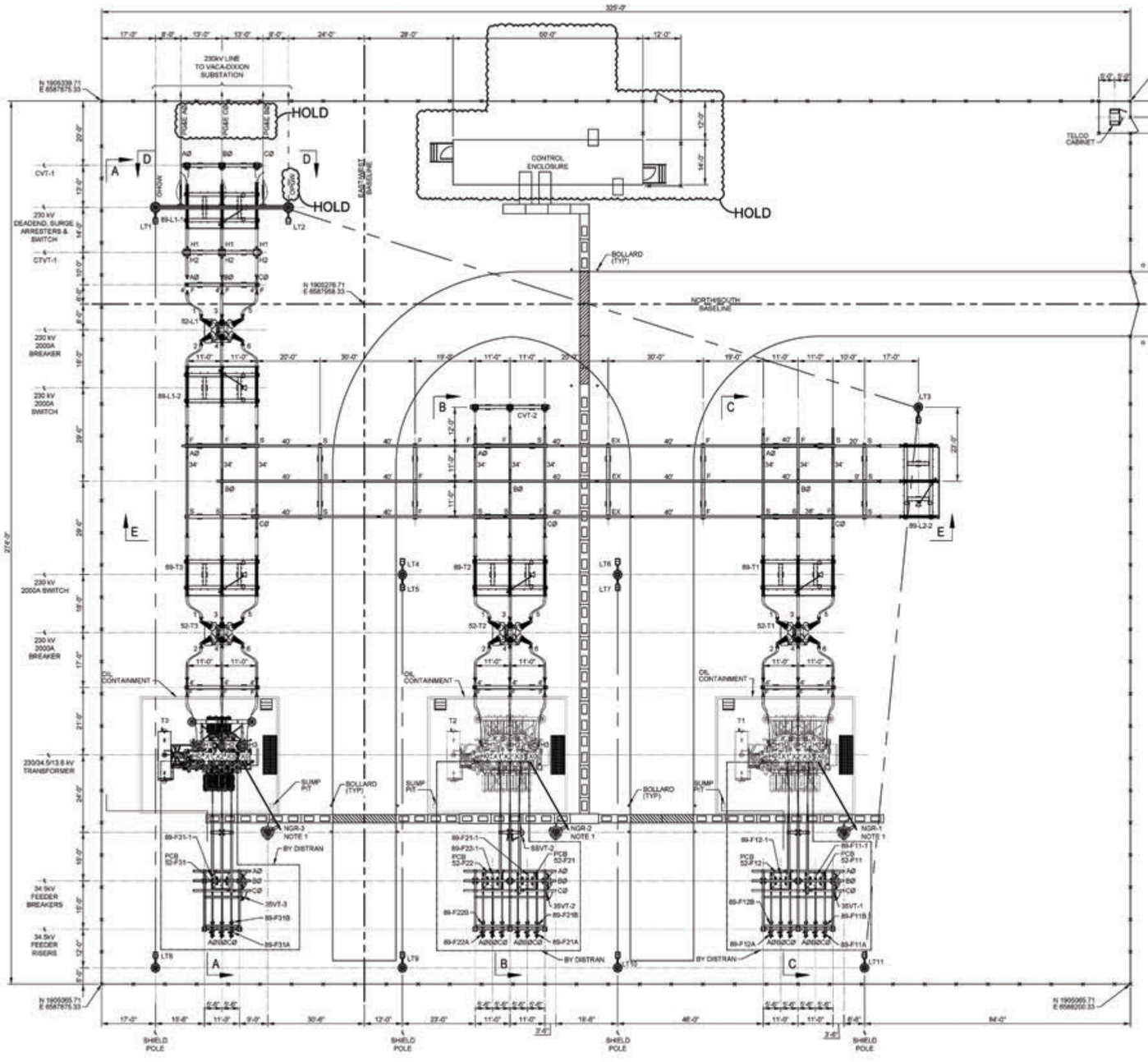
PRELIMINARY
NOT FOR CONSTRUCTION

TETRA TECH

Source: Burns McDonnell Drawing BCR-UG-301-A

NextEra Energy
Corby Battery Energy
Storage Project

Figure 3-4: Typical Duct Bank



ELECTRICAL CLEARANCES		
DESCRIPTION	VOLTAGE CLASS SYSTEM	
OPERATING VOLTAGE	230 kV	34.5 kV
BIL	900 kV	200 kV
CENTERLINE TO CENTERLINE FOR Φ TO Φ FOR RIGID BUS[1]	11'-0"	3-0"
MINIMUM Φ TO Φ, METAL TO METAL[1]	6'-3"	1'-4"
MINIMUM Φ TO GROUND, METAL TO METAL[1]	9'-7"	1'-3"
BOTTOM OF INSULATOR OR BUSHING PORCELAIN TO FDN TOP[2,3]	8'-6"	8'-6"
VERTICAL CLEARANCE OF UNGUARDED LIVE PARTS TO FDN TOP[2,3]	13'-6"	9'-6"
HORIZONTAL CLEARANCE OF UNGUARDED PARTS[2]	6'-3"	4'-6"
CLEARANCE FROM PERIMETER FENCE TO LIVE PARTS	16'-0"	11'-0"

1. IEEE C37.30.1-2011
2. IEEE 1427
3. NESC, PART 1, SECTION 12

BUS TUBE CUTTING SCHEDULE
(APPROXIMATE LENGTH N.T.S.)

A002 5" SCHEDULE 40 ALUM. 40 FT LENGTH

40'-0"	X (14)
38'-0"	X (1)
34'-0"	X (12)
20'-0"	X (1)

NOTE: TUBE CUTTING SCHEDULE FOR REFERENCE ONLY. CONTRACTOR TO CUT TO FIT IN THE FIELD. CUT LONGEST LENGTHS FIRST.

NORTH

HOLD

PRELIMINARY
NOT FOR CONSTRUCTION

HOLD NOTES

1. HOLD PENDING FINAL VENDOR DRAWINGS.

GENERAL NOTES

1. ALL WORK DONE BY CONTRACTOR/INSTALLER PURSUANT TO THIS DRAWING SHALL: (A) CONFORM TO THE GOVERNING CONTRACT DOCUMENTS; (B) BE PERFORMED EXCLUSIVELY BY ITS TRAINED, COMPETENT PERSONNEL OR, WHERE PERMITTED, THAT OF ITS SUBCONTRACTOR(S); AND (C) COMPLY WITH ALL APPLICABLE SAFETY LAWS, REGULATIONS, PROGRAMS AND PRACTICES TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING THE CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERFORMING THE WORK.
2. UNDERGROUND OR EMBEDDED UTILITIES [MAY] EXIST WITHIN THE AREA OF AND ADJACENT TO THE LIMITS OF THE WORK. THE LOCATION OR IDENTIFICATION OF SUCH UTILITIES HAS NOT BEEN VERIFIED BY OWNER OR BY S&L. CONTRACTOR/INSTALLER IS RESPONSIBLE FOR FIELD LOCATING AND IDENTIFYING UNDERGROUND OR EMBEDDED UTILITIES AND ANY OTHER UNDERGROUND OR EMBEDDED UTILITY DIMENSIONS.
3. REFERENCES USED HAVE BEEN IDENTIFIED ON EXCAVATION/ FOUNDATION/DEMOLITION DRAWINGS AND HAVE BEEN PROVIDED TO ASSIST THE CONTRACTOR/INSTALLER IN THE FIELD LOCATING EXISTING UTILITIES AND OTHER POTENTIAL UNDERGROUND OR EMBEDDED INTERFERENCES. THESE REFERENCES ONLY SHOW THE APPROXIMATE LOCATION OF POTENTIAL UNDERGROUND OR EMBEDDED UTILITIES AND MAY NOT INDICATE OR REFLECT ALL EXISTING UNDERGROUND OR EMBEDDED UTILITIES OR THEIR ACTUAL LOCATIONS.
4. REFERENCES IDENTIFIED SHALL NOT SUBSTITUTE FOR THE CONTRACTOR'S/INSTALLER'S OBLIGATION TO FIELD LOCATE ANY UNDERGROUND OR EMBEDDED UTILITIES OR INTERFERENCES THAT MAY AFFECT THE WORK.
5. DUE CAUTION SHALL BE TAKEN DURING ANY EXCAVATION/FOUNDATION/DEMOLITION WORK WITHIN THE AREA OF AND ADJACENT TO THE LIMITS OF THE WORK DUE TO POSSIBLE INTERFERENCES THAT MAY NOT BE REFLECTED ON THE REFERENCES IDENTIFIED.

NOTES

1. SEE DETAIL 19 ON DWG P005-02 FOR NEUTRAL GROUNDING REACTOR ASSEMBLY.

LEGEND

o	GATE CATCH
•	BOLLARD
F	FIXED BUS FITTING
S	SLIP BUS FITTING
EX	EXPANSION BUS FITTING
▽	SWITCH OPERATOR (MANUAL)
	YARD LIGHT FIXTURE
	ROAD RATED TRENCH SECTION
	PEDESTRIAN TRENCH SECTION
	FENCE
	SHIELD WIRE
OPGW	HOLD

REFERENCE DRAWINGS

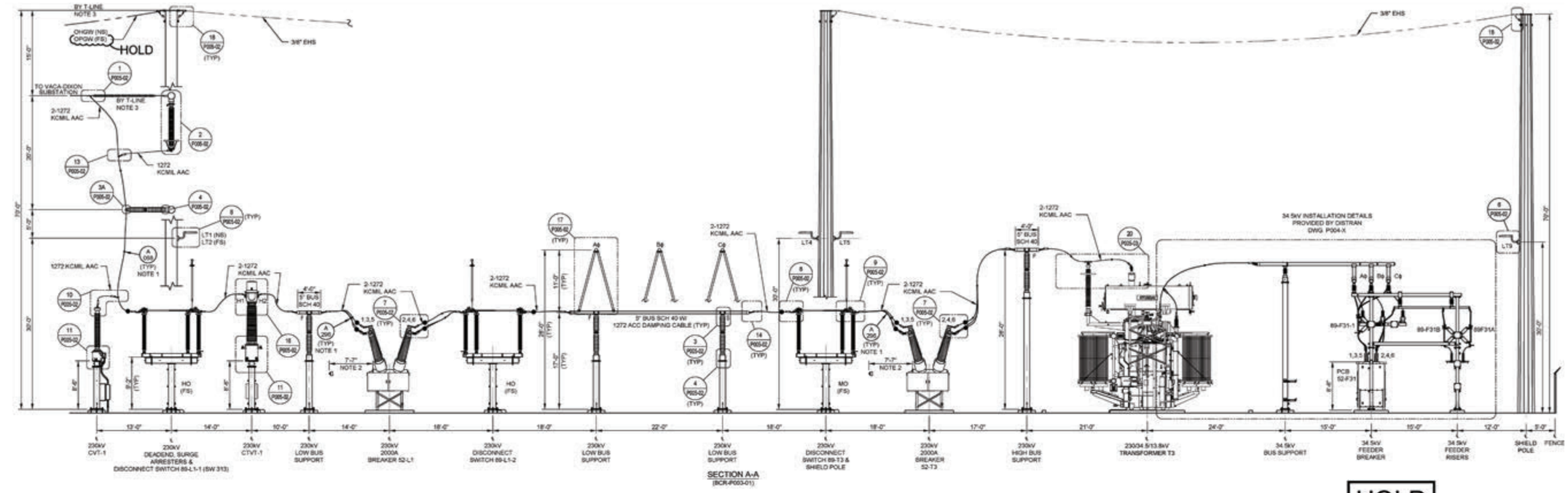
BCR-S002-01	SITE PLAN
BCR-P004-01	GENERAL ARRANGEMENT ELEVATIONS A-A & B-B
BCR-P004-02	GENERAL ARRANGEMENT ELEVATIONS C-C, D-D, & E-E
BCR-P005-03	FOUNDATION PLAN
BCR-P008-01	FENCE DETAILS
BCR-P010-01	CONDUIT & CABLE PLAN
BCR-P012-01	GROUNDING PLAN

TETRA TECH

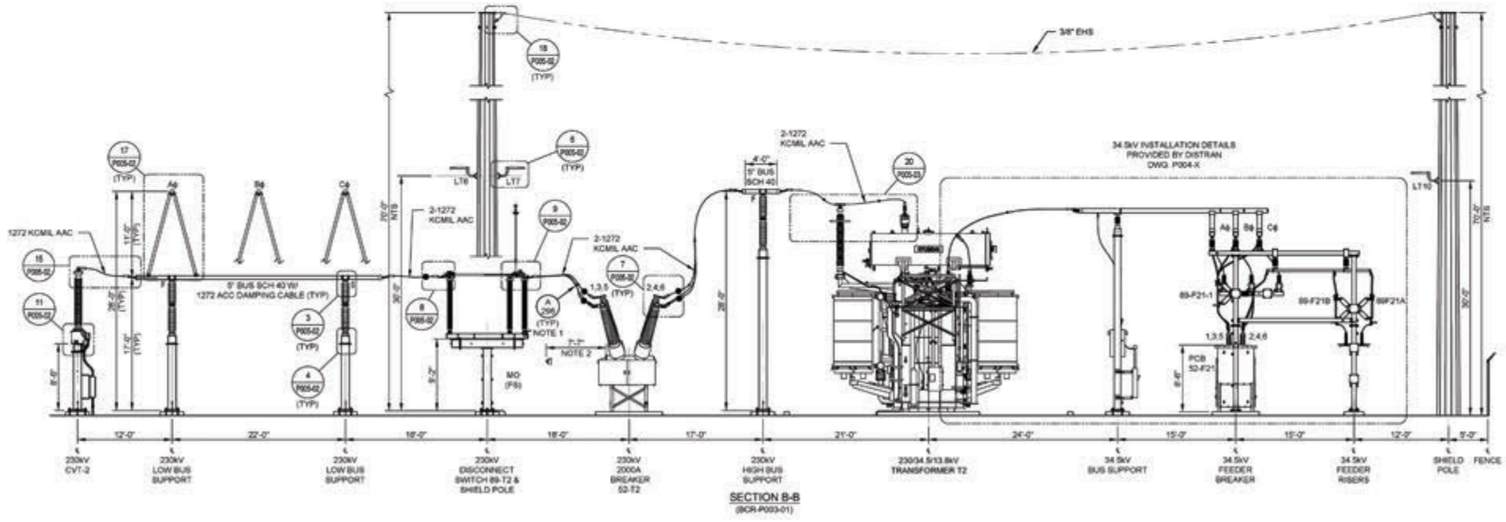
Source: Sargent & Lundy Drawing BCR-P003-01

NextEra Energy
Corby Battery Energy Storage Project

Figure 3-5a: Substation General Layout



SECTION A-A
(BCR-P003-01)



SECTION B-B
(BCR-P003-01)

HOLD

PRELIMINARY
NOT FOR CONSTRUCTION

HOLD NOTES

1. HOLD PENDING FINAL VENDOR DRAWINGS.

GENERAL NOTES

1. CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERFORMING THE WORK.
2. SEE DRAWING BCR-P003-01 FOR ADDITIONAL NOTES.

NOTES

1. CABLE SPACERS SHALL BE INSTALLED AT 8 TO 12 FT SPACING OR AS REQUIRED.
2. MINIMUM CLEARANCE FOR INTERRUPTER REMOVAL.
3. OHGW/OPGW CABLE, JUMPERS, AND CONNECTIONS SHALL BE PROVIDED AND INSTALLED BY T-LINE CONTRACTOR.

LEGEND

#	FIXED BUS FITTING
S	SLIP BUS FITTING
EX	EXPANSION BUS FITTING
- - - - - -	SHIELD WIRE
#	MATERIAL IN BOM, DWG BCR-P005-01
# / #	DETAIL NUMBER / SHEET NUMBER IN WHICH DETAIL APPEARS

REFERENCE DRAWINGS

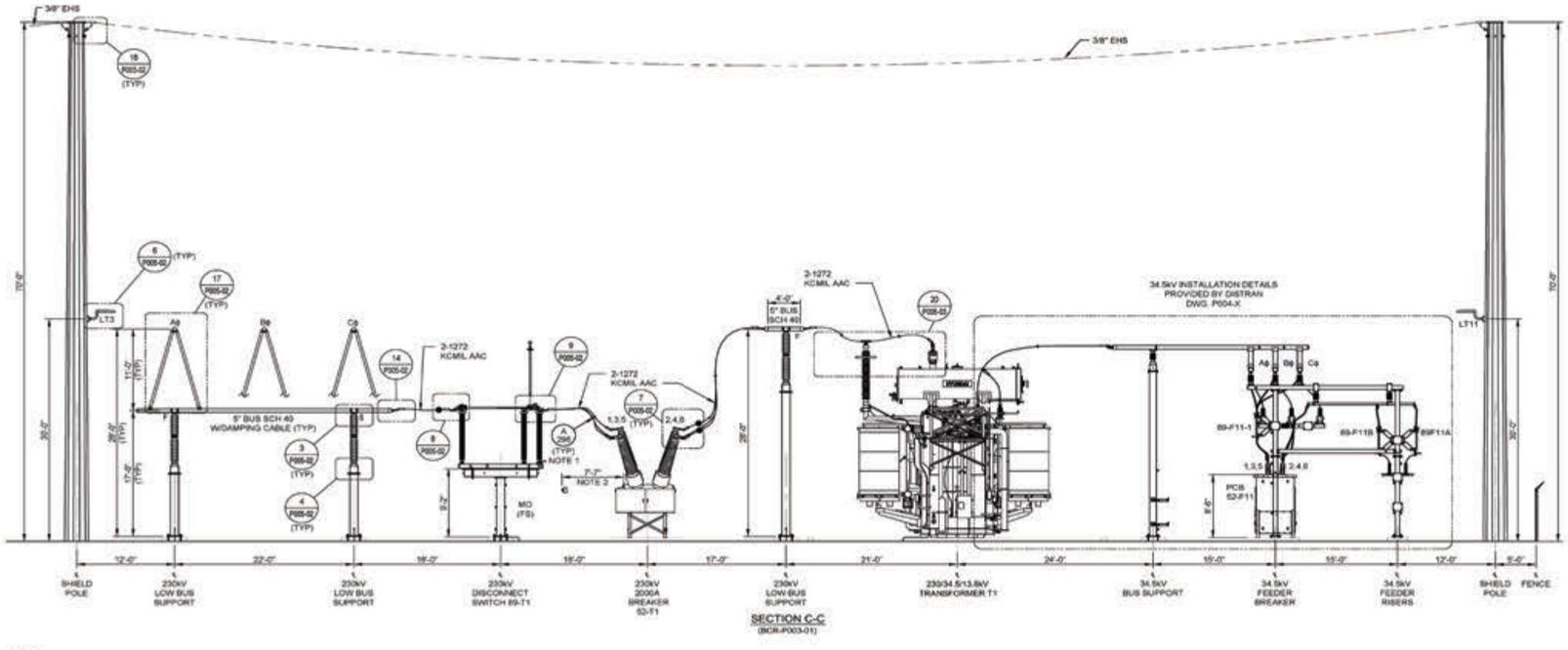
BCR-P003-01	GENERAL ARRANGEMENT PLAN
BCR-P004-02	GENERAL ARRANGEMENT ELEVATIONS C-C, D-D, & E-E
BCR-P005-01	BILL OF MATERIAL
BCR-P005-02	GENERAL ARRANGEMENT BUS DETAILS 1-19
BCR-P005-03	GENERAL ARRANGEMENT BUS DETAILS 20-22

TETRA TECH

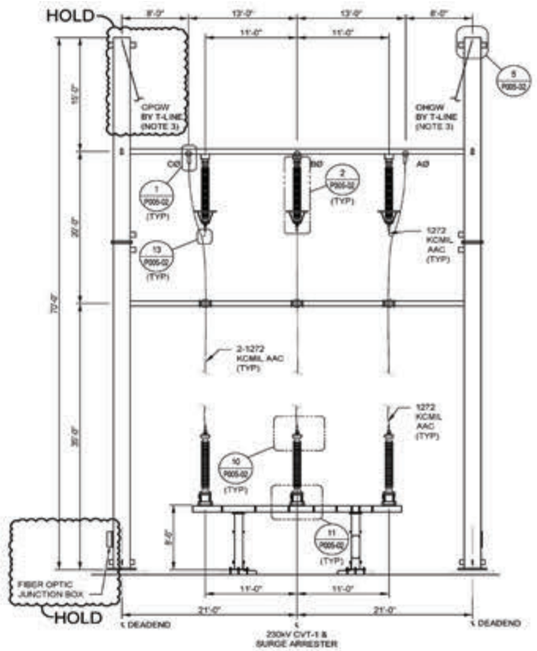
Source: Sargent & Lundy Drawing BCR-P004-01

NextEra Energy
Corby Battery Energy Storage Project

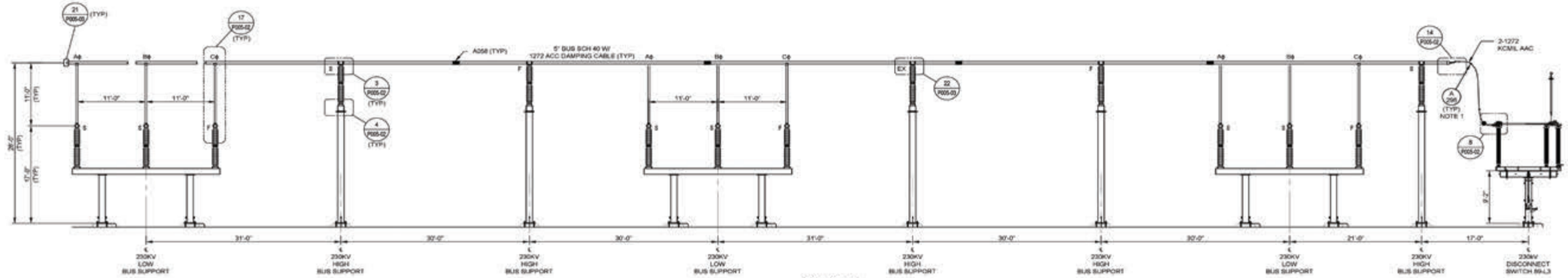
Figure 3-5b: Substation General Elevations



SECTION C-C
(BCR-P003-01)



SECTION D-D
(BCR-P003-01)



SECTION E-E
(BCR-P003-01)

HOLD NOTES

1. HOLD PENDING FINAL VENDOR DRAWINGS.

GENERAL NOTES

1. CONTRACTOR/INSTALLER SHALL TAKE ALL APPROPRIATE PRECAUTIONS TO ENSURE THE SAFETY OF ALL PEOPLE LOCATED ON THE WORK SITE, INCLUDING CONTRACTOR'S/INSTALLER'S PERSONNEL (OR THAT OF ITS SUBCONTRACTOR(S)) PERFORMING THE WORK.
2. SEE DRAWING BCR-P003-01 FOR ADDITIONAL NOTES.

NOTES

1. CABLE SPACERS SHALL BE INSTALLED AT 8 TO 12 FT SPACING OR AS REQUIRED
2. MINIMUM CLEARANCE FOR INTERRUPTER REMOVAL
3. OHGW/OPGW CABLE, JUMPERS, AND CONNECTIONS SHALL BE PROVIDED AND INSTALLED BY T-LINE CONTRACTOR.

LEGEND

F	FIXED BUS FITTING
S	SLIP BUS FITTING
EX	EXPANSION BUS FITTING
	SHIELD WIRE
	MATERIAL IN BOM, DWG BCR-P005-01
	DETAIL NUMBER / SHEET NUMBER IN WHICH DETAIL APPEARS

REFERENCE DRAWINGS

BCR-P003-01	GENERAL ARRANGEMENT PLAN
BCR-P004-01	GENERAL ARRANGEMENT ELEVATIONS A-A & B-B
BCR-P005-01	BILL OF MATERIAL
BCR-P005-02	GENERAL ARRANGEMENT BUS DETAILS 1-19
BCR-P005-03	GENERAL ARRANGEMENT BUS DETAILS 20-22

HOLD

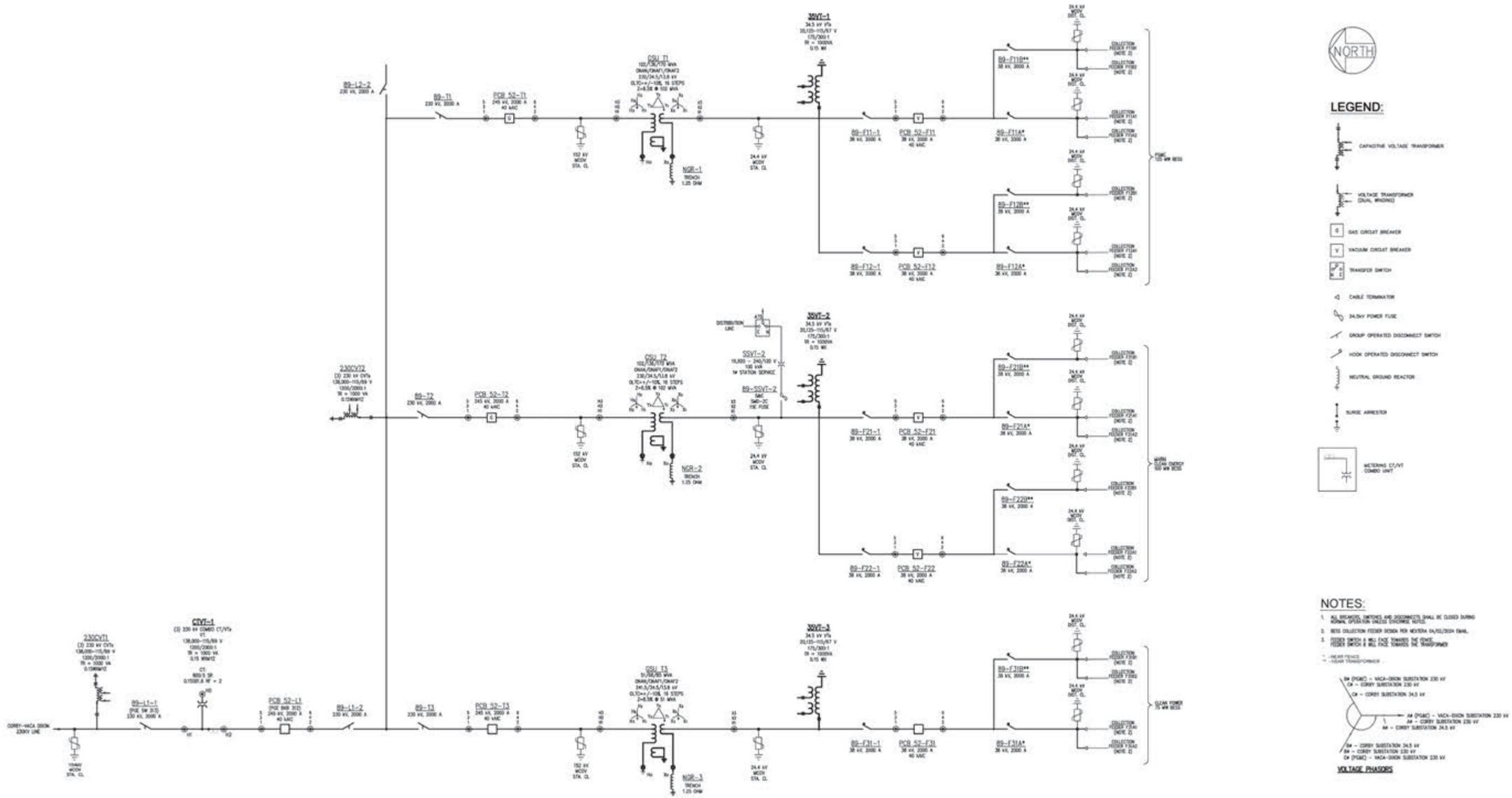
PRELIMINARY
NOT FOR CONSTRUCTION

TETRA TECH

Source: Sargent & Lundy Drawing BCR-P004-02

NextEra Energy
Corby Battery Energy Storage Project

Figure 3-5c: Substation General Elevations



TETRA TECH

Source: Sargent & Lundy Drawing BCR-S001-01

NextEra Energy
Corby Battery Energy Storage Project

Figure 3-6: Substation One-Line Diagram.

3.3 Transmission Line Construction[7]

The following subsections describe the anticipated methods used for overhead and underground gen-tie line and redundant fiber optic cable pathway construction.

3.3.1 Overhead Transmission Line Construction

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

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

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

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

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

3.3.2 Underground Transmission Line Construction

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

[7] Appendix B (b) (2) (C)

Project staging area for use as cover. Excess spoils will be hauled offsite to the closest approved facility for disposal.

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

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

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

3.4 Transmission Interconnection Studies

The Applicant filed an Interconnection Request (IR) to the California Independent System Operator (CAISO) within the Queue Cluster [QC] 9 IR window. The Applicant, in cooperation with CAISO, prepared the Phase I Interconnection Study (CAISO 2017a) and Phase II Interconnection Study (CAISO 2017b), as modified by Addendum #4 dated August 31, 2021 (2021 Generator Interconnection Reassessment Report; CAISO 2021), which considered potential system impacts of the proposed Project. These studies are provided in Confidential Appendix 3-A.

Because the Project has the capability of producing and delivering more megawatts (MW) at the POI than the requested amount, the Applicant will be required to install or demonstrate that a control system will be put in place to manage facility output to not exceed the maximum requested POI delivery amount. This control system will take into account the expected losses on the gen-tie line. The Project was modeled with the ability to meet 0.95 leading/lagging power factor at the high side of the main transformer according to Federal Energy Regulatory Commission Order 827 by adding 50-

megavolt ampere reactive (MVAr)[8] capacitors at the 34.5-kV bus to compensate for plant losses. The results of the Phase II Study and 2021 Generator Interconnection Reassessment Report provide the California Energy Commission with the information needed to conduct an environmental assessment of the impacts of transmission and interconnection facilities.

3.4.1 New Equipment Installation

The IR studies indicate that the following equipment will be installed by PG&E at Vaca-Dixon Substation:

- One new 230-kV double bus bay with circuit breaker, switch, coupling capacitor voltage transformers, proactive relays, and fiber termination;
- Remote terminal unit and supervisory control and data acquisition at the Project site; and
- The approximately 0.2-mile long segment of a new 230-kV gen-tie line from the POCO to the POI within Vaca-Dixon Substation.

The following equipment will be installed by the Applicant:

- The approximately 0.9-mile-long 230-kV gen-tie line from the Project substation to the POCO;
- Three-phase, 230/34.5/13.8-kV, 170 MVA main step-up transformers; and
- Battery inverters rated 2.2 MVA at 100 percent power factor (2.09 MW at 95 percent power factor).

3.4.2 System Impact Studies[9]

The IR studies assessed the effect of the addition of QC9 projects to the local electrical system under various conditions of stress (see Confidential Appendix 3-A).[10] The following subsections describe the results of these studies and any applicable mitigations required for the Project.

3.4.2.1 Power Flow Reliability Assessment

- Steady State Power Flow – The IR studies did not identify any steady state power flow issues associated with the Project.
- Steady State Voltage – The Project's buses may experience high voltages and/or voltage deviations. The Applicant will need to manage the Project's reactive power to meet the CAISO reactive power requirements and to control Project-side voltages within equipment tolerances.
- Thermal Overloads – Although the reliability thermal analysis completed for the PG&E North Interconnection Area Study Report (CAISO 2017b) identified a thermal overload on the Stockton A-Weber #3 60-kV line that requires mitigation, the reliability thermal loading assessment and bus flow analysis did not identify any Reliability Network Upgrades necessary for the Project.

[8] Megavolt ampere of reactive power, or MVAr, is the measure of the reactive load where power is alternately stored in the load and then returned to the source.
[9] Appendix B (g) (18) (A)
[10] Appendix B (b) (2) (E)

- Voltage Performance – There were no steady state voltage violations identified in the reliability analysis for this Project. The Project plant side can experience high voltages (i.e., 1.08 per unit) for summer peak base case conditions. The Project will likely need load-tap changers to manage plant-side voltages due to voltage support required to maintain Vaca-Dixon Substation's 230 kV near scheduled voltage.
- Mitigation – No additional power flow mitigation was identified for the Project.

3.4.2.2 Short-Circuit Duty

Short-circuit studies were performed to determine the fault duty impact of adding the QC9 Phase II PG&E North Interconnection Area projects to the transmission system. These studies are also needed to perform relay coordination among adjacent substations. The fault duties were calculated before and after the QC9 Phase II projects to identify any equipment overstress conditions. The fault duties were calculated again after the mitigation plan was added in the short-circuit base case. The short-circuit duty assessment showed that the addition of QC9 projects resulted in short-circuit duty violations on the Cottonwood 230-kV circuit breakers 222 and 232 as well as Tesla 230-kV circuit breaker 842. The short-circuit analysis did not identify any mitigations necessary for this Project at Tesla 230 kV circuit breaker 842, but mitigations in the form of replacement of Cottonwood 230-kV circuit breakers 222 and 232 were determined to be necessary.

3.4.2.3 Transient Stability Evaluation

Limited transient stability analysis was conducted for the Project using the summer peak and spring off-peak, full loop power flow cases to ensure that the transmission system remains stable and meets the Western Electricity Coordinating Council Disturbance Performance Criteria. Disturbance simulations were performed for a study period of 20 seconds for 40 contingencies; no instabilities were attributed to the Project during simulations, and no mitigations were determined to be necessary for the Project.

3.4.2.4 Deliverability Assessments

The On-peak Deliverability Assessment (see CAISO 2017b) found that the addition of this Project will result in deliverability thermal overloads on the system. The thermal overloads found in the On-peak Deliverability Assessment will be mitigated by replacing Contra Costa-Brentwood 230-kV Line CB 650 conductor and drops to increase the line rating.

3.5 Transmission Line Safety and Nuisances[11]

The following subsections describe potential safety and nuisance issues associated with the proposed electrical interconnection.

3.5.1 Electrical Clearances

Typical high-voltage overhead transmission lines are composed of bare conductors connected to supporting structures by means of porcelain, glass, or plastic insulators. The air surrounding the energized conductor acts as the insulating medium. Maintaining sufficient clearances, or air space,

[11] Appendix B (g) (1)

around the conductors to protect the public and utility workers is paramount to the safe operation of the line. The required safety clearance required for the conductors is determined by considering factors such as the normal operating voltages, conductor temperatures, short-term abnormal voltages, windblown swinging conductors, contamination of the insulators, clearances for workers, and clearances for public safety. The gen-tie line will conform to the minimum clearances specified in CPUC GO 95. Electric utilities, state regulators, and local ordinances may specify additional (more restrictive) clearances. Typically, clearances are specified for the following:

- Distance between the energized conductors;
- Distance between the energized conductors and the supporting structure;
- Distance between the energized conductors and other power or communication wires on the same supporting structure, or between other power or communication wires above or below the conductors;
- Distance from the energized conductors to the ground and features, such as roadways, railroads, driveways, parking lots, navigable waterways, and airports;
- Distance from the energized conductors to buildings and signs; and
- Distance from the energized conductors to other parallel powerlines.

The transmission interconnection for the Project will be designed to meet appropriate federal, state, and local clearance requirements.

3.5.2 Electrical Effects

The electrical effects of high-voltage transmission lines fall into two broad categories: corona effects and field effects. Corona is the ionization of air that occurs at the surface of the energized conductor and suspension hardware attributable to high electric field strength at the surface of the metal during certain conditions. Corona may result in radio and television interference, audible noise, light, and the production of ozone. Field effects are the voltages and currents that may be induced in nearby conducting objects. A transmission line's inherent electric and magnetic fields cause these effects.

3.5.2.1 Electric and Magnetic Fields[12]

Like the energized components of operating electrical motors, home wiring, lighting, and other electrical appliances, operating powerlines produce electric and magnetic fields commonly referred to as "electromagnetic fields" (EMF). The EMF produced by the alternating current (AC) electrical power system in the United States has a frequency of 60 hertz, meaning that the intensity and orientation of field changes 60 times per second.

Electric fields around transmission lines are produced by electrical charges on the energized conductor. Electric field strength is directly proportional to the line's voltage (i.e., increased voltage produces a stronger electric field). At a given distance from the transmission line conductor, the electric field is inversely proportional to the distance from the conductors, so that the electric field strength declines as the distance from the conductor increases. The strength of the electric field is

[12] Appendix B (g) (18) (B)

measured in units of kV per meter. The electric field around a transmission line remains steady and is not affected by the common daily and seasonal fluctuations in usage of electricity by customers.

Magnetic fields around transmission lines are produced by the level of current flow, measured in terms of amperes, through the conductors. The magnetic field strength is also directly proportional to the current (i.e., increased amperes produce a stronger magnetic field). The magnetic field is inversely proportional to the distance from the conductors. Thus, like the electric field, the magnetic field strength declines as the distance from the conductor increases. Magnetic fields are expressed in units of milligauss. The amperes and, therefore, the magnetic field around a transmission line, fluctuate daily and seasonally as the usage of electricity varies.

Considerable research has been conducted on the possible biological effects and human health effects from EMFs. This research has produced many studies that offer no uniform conclusions about whether long-term exposure to EMFs is harmful. In the absence of conclusive or evocative evidence, some states, including California, have chosen not to specify maximum acceptable levels of EMF. Instead, these states mandate a program of prudent avoidance whereby EMF exposure to the public would be minimized by encouraging electric utilities to use cost-effective techniques to reduce the levels of EMFs.

3.5.2.2 Audible Noise and Radio and Television Interference

Corona from a transmission line may result in the production of audible noise or radio and television interference. Corona is a function of the voltage of the line, the diameter of the conductor, and the condition of the conductor and suspension hardware. The electric field gradient is the rate at which the electric field changes and is directly related to the line voltage.

The electric field gradient is greatest at the surface of the conductor. Large-diameter conductors have lower electric field gradients at the conductor surface and, hence, lower corona than smaller conductors, everything else being equal. Irregularities, such as nicks and scrapes on the conductor surface or sharp edges on suspension hardware concentrate the electric field at these locations, increasing corona at these spots. Contamination on the conductor surface, such as dust or insects, can also cause irregularities that are a source for corona. Raindrops, snow, fog, and condensation are also sources of irregularities.

3.5.2.3 EMF, Audible Noise, and Radio and Television Interference Assumptions

EMF, audible noise, and radio and television interference near powerlines vary depending on line design, line loading, distance from the line, and other factors. Electric fields, corona, audible noise, and radio and television interference are functions of line voltage and not the level of power flow. Because line voltage remains nearly constant for a transmission line during normal operation, the audible noise associated with the 230-kV lines in the area will be of the same magnitude before and after the Project.

Empirical equations have been developed by the Bonneville Power Administration 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 Bonneville Power Administration 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 A-weighted decibels (or dBA) for the Applicant portion and not to exceed 28 dBA for the PG&E portion of the 230-kV transmission line (see Appendix 4.13-B). 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.

Corona typically becomes a design concern for transmission lines having voltages of 345 kV and above. Since the gen-tine line will be connected at 230 kV, no corona-related design issues are anticipated to be encountered.

The magnetic field is proportional to line loading (amperes), which varies as demand for electrical power varies and as supply from the battery facility is adjusted by the system operators to meet changes in demand.

Construction and operation of the Project, including the interconnection of the facility with PG&E's transmission system, are not expected to result in significant increases in EMF levels, corona, audible noise, or radio and television interference.

3.5.2.4 Induced Current and Voltages

A conducting object, such as a vehicle or person, in an electric field will experience induced voltages and currents. The strength of the induced current will depend on the electric field strength, the size and shape of the conducting object, and the object-to-ground resistance. When a conducting object is isolated from the ground and a grounded person touches the object, a perceptible current or shock may occur as the current flows to ground. These types of hazardous and nuisance shocks can be mitigated by ensuring that metallic objects on or near the right-of-way are grounded and that sufficient clearances are provided at roadways and parking lots to keep electric fields at these locations low enough to prevent vehicle short-circuit currents from exceeding 5 milliamperes.

Magnetic fields can also induce voltages and currents in conducting objects. Typically, this requires a long metallic object, such as a wire fence or aboveground pipeline, which is grounded at only one location. A person who closes an electrical loop by grounding the object at a different location will experience a shock like that described above for an ungrounded object. This circumstance can be mitigated by establishing multiple grounding points on fences or pipelines, especially those oriented parallel to the transmission line.

The proposed 230-kV gen-tie line will be constructed in conformance with CPUC GO 95 and Title 8 California Code of Regulations 2700 requirements, which include design and construction requirements to mitigate the potential for induced current or voltages to occur. Therefore, hazardous shocks are unlikely to occur as a result of Project construction, operation, or maintenance.

3.5.3 Aviation Safety

Federal Aviation Administration (FAA) Regulations, 14 Code of Federal Regulations Part 77, establishes standards for determining obstructions in navigable airspace and sets forth requirements for notification of proposed construction. These regulations require FAA notification for construction over 200 feet above ground level. In addition, notification is required if the obstruction is lower than specified heights and falls within restricted airspace in the approaches to public or military airports. For airports with runways longer than 3,200 feet, the restricted space extends 20,000 feet (3.3 nautical miles) from the runway. For airports with runways measuring 3,200 feet or less, the restricted space extends 10,000 feet (1.7 nautical miles). For heliports, the restricted space extends 5,000 feet (0.8 nautical mile).

The nearest airport to the Project is Nut Tree Airport, located approximately 2.9 miles southwest of the Project site. The Project is not located within the airport influence area of the Nut Tree Airport Plan (Solano County 1988). However, the Project is located approximately 7.25 miles north of Travis Air Force Base and is within the airport influence area 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 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 2024). The Project will not include any structures taller than 200 feet and therefore does not require Airport Land Use Commission review. Since the Project will not produce glare, will not attract birds, and will not otherwise interfere with the safety of aircraft operation, it thus 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).

Based on FAA's online Notice Criteria Tool, 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.

3.5.4 Fire Hazards

The proposed 230-kV gen-tie line will be designed, constructed, and maintained in accordance with applicable standards, including GO 95 and Public Resource Code 4292, which establish clearances from other humanmade and natural structures as well as vegetation management and clearance requirements to mitigate potential fire hazards. The Applicant will maintain the transmission line corridor and immediate area in accordance with existing regulations and accepted industry practices, which will include identification and abatement of potential fire hazards.

3.6 Project Design Measures[13, 14]

No impacts associated with radio and television interference, EMF, hazardous shocks, aviation safety, or fire hazards have been identified for the Project. The Project will be constructed according to the standards described in Table 3-1, so no specific Project Design Measures are required.

3.7 Laws, Ordinances, Regulations, and Standards[15]

Table 3-1 provides a list of applicable LORS for the proposed gen-tie line, Project substation, and engineering.

Table 3-1. Laws, Ordinances, Regulations, and Standards for Electrical Transmission

LORS	Category	Applicability
Title 8 CCR, Section 2700 et seq. "High Voltage Electrical Safety Orders"	Design and Construction	Establishes essential requirements and minimum standards for installation, operation, and maintenance of electrical installation and equipment to provide practical safety and freedom from danger
CPUC GO 52, "Construction and Operation of Power and Communication Lines"	Design and Construction	Applies to the design of facilities to provide or mitigate inductive interference
ANSI/IEEE 593, "IEEE Recommended Practices for Seismic Design of Substations"	Design and Construction	Recommends design and construction practices
IEEE 980, "Containment of Oil Spills for Substations"	Design and Construction	Recommends preventions for release of fluids into the environment
IEEE 998, "Direct Lightning Stroke Shielding of Substations"	Design and Construction	Recommends protections for electrical system from direct lightning strikes
IEEE 1119, "IEEE Guide for Fence Safety Clearances in Electric-Supply Stations"	Design and Construction	Recommends clearance practices to protect persons outside the facility from electric shock
CPUC Decision 93-11-013	EMF	CPUC position on EMF reduction
CPUC GO 131-D, "Rules for Planning and Construction of Electric Generation, Line, and Substation Facilities in California"	EMF	CPUC construction application requirements, including requirements related to EMF reduction
ANSI/IEEE 544-1994, "Standard Procedures for Measurement of Power Frequency Electric and Magnetic Fields from AC Powerlines"	EMF	Standard procedure for measuring EMF from an electric line that is in service
8 CCR 2700 et seq. "High Voltage Electrical Safety Orders"	Hazardous Shock	Establishes essential requirements and minimum standards for installation, operation, and maintenance of electrical equipment to provide practical safety and freedom from danger
ANSI/IEEE 80, "IEEE Guide for Safety in AC Substation Grounding"	Hazardous Shock	Presents guidelines for assuring safety through proper grounding of AC outdoor substations
National Electric Safety Code, ANSI C2, Section 9, Article 92, Paragraph E; Article 93, Paragraph C	Hazardous Shock	Covers grounding methods for electrical supply and communications facilities

[13] Appendix B (g) (18) (C)
[14] Appendix B (g) (1)
[15] Appendix B (i) (1) (A)

LORS	Category	Applicability
47 CFR 15.25, "Operating Requirements, Incidental Radiation	Communications Interference	Prohibits operations of any device emitting incidental radiation that causes interference to communications; the regulation also requires mitigation for any device that causes interference
CPUC GO-52	Communications Interference	Covers all aspects of the construction, operation, and maintenance of power and communication lines and specifically applies to the prevention or mitigation of inductive interference
Title 14 CFR, Part 77, "Objects Affecting Navigable Airspace"	Aviation Safety	Describes the criteria used to determine whether a "Notice of Proposed Construction or Alteration" (FAA Form 7460-1) is required for potential obstruction hazards.
FAA Advisory Circular No. 70/7460-1M, "Obstruction Marking and Lighting"	Aviation Safety	Describes the FAA standards for marking and lighting of obstructions as identified by FAA Regulations Part 77
14 CCR Sections 1250-1258, "Fire Prevention Standards for Electric Utilities"	Fire Hazards	Provides specific exemptions from electric pole and tower firebreak and electric conductor clearance standards and specifies when and where standards apply
ANSI/IEEE 80, "IEEE Guide for Safety in AC Substation Grounding"	Fire Hazards	Presents guidelines for assuring safety through proper grounding of AC outdoor substations
GO-95, CPUC, "Rules for Overhead Electric Line Construction," Section 35	Fire Hazards	CPUC rule covers all aspects of design, construction, operation, and maintenance of electric transmission line and fire safety (hazards)

AC – alternating current; ANSI – American National Standards Institute; CCR – California Code of Regulations; CFR – Code of Federal Regulations; CPUC – California Public Utilities Commission; EMF – electromagnetic field; FAA – Federal Aviation Administration; FAR – Federal Aviation Regulation; GO – General Order; IEEE – Institute of Electrical and Electronics Engineers; LORS – laws, ordinances, regulations, and standards

3.7.1 Jurisdiction

Table 3-2 lists the anticipated federal, state, and local agencies with jurisdiction to issue permits and approvals for the Project, conduct inspections, or enforce the LORS identified in Table 3-1. Table 3-2 also identifies the responsibilities of these agencies as they relate to Project construction, operation, and maintenance.

Table 3-2. Agency Contacts for Electrical Transmission[16]

Agency/Jurisdiction	Contact	Responsibility
FAA	6349 Lindbergh Drive Sacramento, CA 95837 (916) 561-7970	Establishes regulations for marking and lighting of obstructions in navigable airspace (Advisory Circular No. 70/7460-1M)
CEC	1516 9th Street Sacramento, CA 95814 (916) 654-4287	Jurisdiction over new transmission lines associated with thermal power plants that are 50 MW or more (PRC 25500) Jurisdiction of lines out of a thermal power plant to the interconnection point to the utility grid (PRC 25107) Jurisdiction over modifications of existing thermal power plants that increase peak operating voltage or peak kilowatt capacity 25 percent (PRC 25123)

[16] Appendix B (i) (1) (B), Appendix B (i) (2)

Agency/Jurisdiction	Contact	Responsibility
CPUC	505 Van Ness Avenue San Francisco, CA 94102 (415) 703-2782	Regulates construction and operation of overhead transmission lines (GO 95, GO 131-D) Regulates construction and operation of power and communications lines for the prevention of inductive interference (GO 52) The CPUC will be a responsible agency under CEQA and will rely on the CEC's Final Decision documents to issue a Notice of Construction for PG&E's construction of the underground portion of the gen-tie and necessary improvements within the Tesla Substation to interconnect the Project.
Solano County	675 Texas Street, Suite 5500 Fairfield, CA 94533 (707) 784-6765	Establishes and enforces zoning regulations for specific land uses Issues variances in accordance with zoning ordinances Issues and enforces certain ordinances and regulations concerning fire prevention and electrical inspection Jurisdiction over safety inspection of electrical installations that connect to the supply of electricity (NFPA 70, National Electric Code)
City of Vacaville	650 Merchant Street Vacaville, CA 95688 (707) 449-5170	

CEC – California Energy Commission; CEQA – California Environmental Quality Act; CPUC – California Public Utilities Commission; FAA – Federal Aviation Administration; GO – General Order; MW – megawatt; NFPA – National Fire Protection Association; PG&E – Pacific Gas and Electric; PRC – Public Resource Code

3.8 References

CAISO (California Independent System Operator). 2017a. Queue Cluster 9 Phase I Study Final Report. January 27.

CAISO. 2017b. Queue Cluster 9 Phase II Study Final Report. November 22.

CAISO. 2021. Generator Interconnection Reassessment Report, Addendum #4 to the Cluster 9 Final Phase II Study Report. August 31.

PG&E (Pacific Gas and Electric). 2022. PG&E Transmission Interconnection Handbook. Available online at: https://www.pge.com/en_US/large-business/services/alternatives-to-pge/third-party-electric-options/electric-transmission-services/transmission-interconnection-handbooks.page.

Solano County. 1988. Nut Tree Airport Land Use Compatibility Plan. Adopted May 1988. Available online at: https://www.solanocounty.com/civicax/filebank/blobdload.aspx?BlobID=37014 (accessed July 2024).

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