DOCKETED	
Docket Number:	24-OPT-04
Project Title:	Potentia-Viridi Battery Energy Storage System
TN #:	258063
Document Title:	Cultural Resources Report
Description:	This report documents efforts to identify and evaluate cultural resources consistent with the requirements of the California Environmental Quality Act (CEQA) and Title 20 of the California Code of Regulations Division 2, Chapter 5, Appendix B Information Requirements for Application for Certification or Small Power Plant Exemption (20 CCR Div. 2 Ch. 5 App. B(g)(2)
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Appendix 3.3A

Cultural Resources Report

Cultural Resources Inventory and Evaluation Report

Potentia Viridi BESS Project, Alameda County, California

JULY 2024

Prepared for:

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National Archaeological Database (NADB) Information

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Firm:	Dudek
Project Proponent:	Levy Alameda, LLC
Report Date:	July 2024
Report Title:	Cultural Resources Inventory and Evaluation Report Potentia Viridi BESS Project, Alameda County, California
Type of Study:	Archaeological and Historic Built-Environment Inventory
Resources:	P-01-010502, P-39-005337
USGS Quads:	Sections 31 and 32 of Township 2S, Range 4E, Mount Diablo Base Meridian; Midway, California, 7.5-minute Quadrangle
Acreage:	232 Acres
Permit Numbers:	Not applicable.
Keywords:	Intensive Pedestrian Survey; Tesla Substation

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Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AC	alternating current
API	Area of Potential Impacts
APN	assessor parcel number
Applicant	Levy Alameda, LLC
BESS	battery energy storage system
BMPs	best management practices
BMS	battery management system
CAISO	California Independent System Operator
CCaIC	Central California Information Center
CCR	California Code of Regulations
CEQA	California Environmental Quality Act
CHRIS	California Historical Resources Information System
CRHR	California Register of Historic Resources
cy	cubic yards
DC	direct current
gen-tie	intertie transmission
HVAC	heating, ventilation, and air conditioning
kV	kilovolt
LFP	lithium iron phosphate
MLD	Most Likely Descendent
MPT	main power transformers
MV	medium voltage
MW	megawatt
NAHC	Native American Heritage Commission
NHPA	National Historic Preservation Act
NFPA	National Fire Protection Association
NPS	National Park Service
NRHP	National Register of Historic Places
NWIC	Northwest Information Center
O&M	operations and maintenance
PCS	power conversion system
PG&E	Pacific Gas and Electric
POCO	Point of Change of Ownership
POI	Point of Interconnection
PRC	Public Resources Code
Project	Potentia Viridi BESS project
SCADA	Supervisory Control and Data Acquisition
UL	Underwriters Laboratories
USGS	U.S. Geological Survey

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Management Summary

The proposed Potentia Viridi Battery Energy Storage System project (Project) is near the eastern boundary of Alameda, California, 2.5 miles west of the City of Tracy and 2 miles south of the interchange of Interstates 580 and 205 and adjacent to the Pacific Gas and Electric (PG&E) Tesla Substation. The Project site is surrounded by vacant, open space, rural roads, and the Pacific Gas and Electric (PG&E) Tesla Substation. The Project site located within Sections 31 and 32, Township 2 South, Range 4 East of the Midway, CA 7.5' USGS Quadrangle map (Figure 1). The Project proposes to construct and operate Battery Energy Storage System composed of lithium-ion batteries, inverters, medium-voltage transformers, a collector substation, and other associated equipment to interconnect into the PG&E Tesla Substation.

This cultural resource inventory report documents Dudek's efforts to identify and evaluate cultural (archaeology and built environment) resources consistent with the requirements of the California Environmental Quality Act (CEQA) and Title 20 of the California Code of Regulations Division 2, Chapter 5, Appendix B Information Requirements for Application for Certification or Small Power Plant Exemption (20 CCR Div. 2 Ch. 5 App. B(g)(2). The Project's lead agency under CEQA is the California Energy Commission. Dudek's efforts included a records search of the California Historical Resources Information Management system, the development of a study area of Area of Potential Impacts (API), correspondence with the Native American Heritage Commission, an intensive level survey of the API for cultural resources, background and archival research, development of a cultural and historic context, and the recordation and evaluation of historic-era resources located in the API using the National Register of Historic Places (NRHP), California Register of Historical resources (CRHR), and Alameda County Register evaluation criteria.

Dudek archaeologists conducted an intensive pedestrian survey of the Project area using standard archaeological procedures and techniques that meet the Secretary of Interior's Standards and Guidelines for cultural resources inventory. Surface visibility was low (less than 10%) throughout the Project site due to dense non-native grasses. One previously recorded resource, the Tesla Substation (P-01-010502), was identified in the Project API. The resource was previously evaluated using the NRHP and CRHR criteria and was recommended as not eligible. Dudek concurs with those previous findings.

This report concludes that there are no cultural resources in the API for the Project.

1 Introduction

1.1 Project Description

Facility Description, Design, and Operation

Levy Alameda, LLC (Applicant), a wholly owned subsidiary of Obra Maestra Renewables, LLC, proposes to construct, operate, and eventually repower or decommission the 400-megawatt (MW) Potentia-Viridi Battery Energy Storage System (Project) on approximately 85 acres in eastern Alameda County. The primary components of the Project include an up to 3,200 megawatt-hour (MWh) battery energy storage system (BESS) facility, an operations and maintenance (O&M) building, a project substation, a 500 kilovolt (kV) overhead intertie transmission (gen-tie) line, and interconnection facilities within the Pacific Gas and Electric (PG&E) owned and operated Tesla Substation.

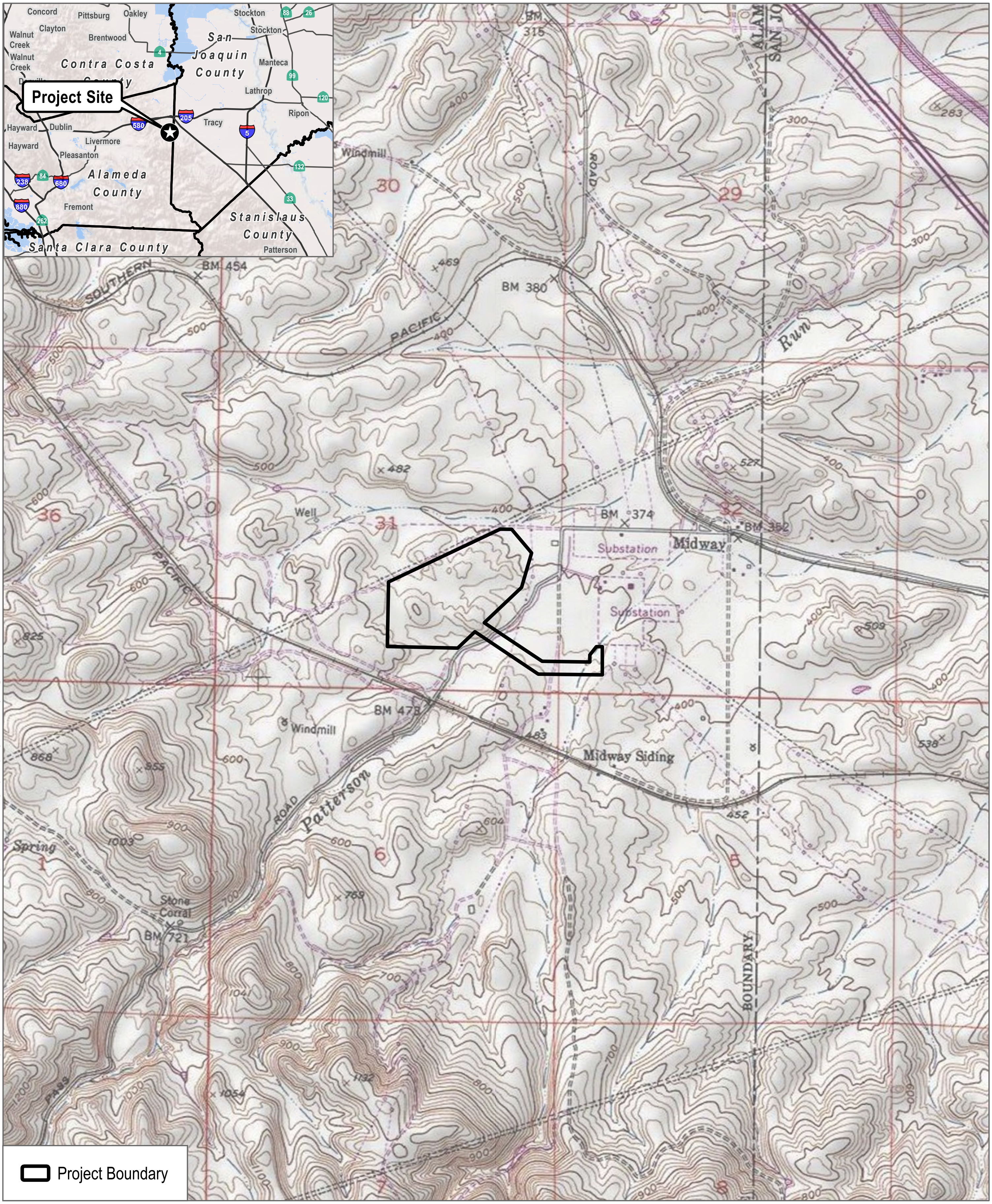
The Project would draw electricity from the power grid to charge and store electrical energy and discharge back to the power grid when the stored energy is needed. The Project would provide several benefits to the power grid, including reducing the need to operate natural gas power plants to balance intermittent renewable generation and serving as an additional capacity resource that would enhance grid reliability.

The Project would be remotely operated and monitored year-round and be available to receive or deliver energy 24 hours a day and 365 days a year. During the operational life of the Project, qualified technicians would routinely inspect the Project facilities and conduct necessary maintenance to ensure reliable and safe operational readiness.

1.2 Project Location

The proposed Project is located near the eastern boundary of Alameda County approximately 2.5 miles west of the City of Tracy and 2 miles south of the interchange of Interstates 580 and 205. The Project site is surrounded by vacant, open space, rural roads, and the PG&E Tesla Substation. The Project site located within Sections 31 and 32, Township 2 South, Range 4 East of the Midway, CA 7.5' USGS Quadrangle map. The Project Location is shown on **Figure 1**.

Development of the BESS facility would occur on about 70 acres of assessor parcel number (APN) 99B-7890-002-04, which is currently comprised of fallowed annual grasslands suitable for grazing. The gen-tie line would extend southeast from the Project substation, crossing Patterson Pass Road, and then proceed east to the Point of Interconnection (POI) at the Tesla Substation. The Project's gen-tie line would be sited on APNs 99B-7890-2-4, 99B-7890-2-6, and 99B-7885-12. Land uses in the immediate vicinity of the Project include undeveloped rural agricultural lands, multiple high-voltage transmission lines and electrical substations, rural roads, and railroad lines. The nearest municipality to the Project site is the City of Tracy approximately 2.5 miles to the northeast. There are a few single-family residences near the Tesla Substation's southern and eastern boundaries. The nearest residence is about 1,500 feet southeast of the Project site and 560 feet south of the proposed gen-tie line; it is owned by the same landowner leasing the lands for the Project.



SOURCE: USGS 7.5 Minute Quadrangle Series

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0 500 1,000 Feet

FIGURE 1

Project Location

Potentia Viridi BESS Project

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The Project location was selected due to it being large enough to support development of the Project, its close proximity to existing electrical infrastructure and the Tesla Substation, thereby minimizing length of the proposed gen-tie line to the POI, and because it is located immediately adjacent to existing roadways for construction and O&M access.

1.3 Project Objectives

The primary purpose of the Project is to assist the State of California in meeting its goal of reducing statewide annual greenhouse gas emissions from the electric sector to 25 million metric tons by 2035. The Project will help balance electricity generation from renewable sources, such as wind and solar, with electricity demand by storing excess generation from emissions free power sources and delivering it back to the grid when demand exceeds real-time generation supply. The Project displaces the need for additional fossil fuel based generating stations needed to serve peak demand periods when renewable sources may be inadequate or unavailable.

The Project Objectives are:

- Construct and operate an economically viable, and commercially financeable, 400-MW battery energy storage facility in Alameda County with an interconnection at the Tesla Substation.
- Assist California electric utilities in meeting obligations under California's Renewable Portfolio Standard Program and Senate Bills 100 and 1020, which require renewable energy sources and zero-carbon resources to supply 60% of all retail sales of electricity to California end-use customers by December 31, 2030, 90% of all retail sales of electricity to California end-use customers by December 31, 2035, 95% of all retail sales of electricity to California end-use customers by December 31, 2040, and 100% of all retail sales of electricity to California end-use customers by December 31, 2045.
- Assist California utilities in meeting obligations under the California Public Utitlity Commission's Mid-Term Reliability Procurement Requirements.
- Develop an electricity storage facility in close proximity to a utility grid-connected substation with existing capacity available for interconnection to minimize environmental impacts.
- Relieve grid congestion, and enhance electricity reliability, without requiring the construction of new regional transmission infrastructure or substantial network upgrades.
- Construct and operate a battery energy storage facility in Alameda County, resulting in economic benefits to the County, creating prevailing wage construction jobs, and facilitating local community benefits.

1.4 Project Components

The Project would include construction, O&M, and eventual decommissioning of a 400 MW BESS with an energy storage capacity up to 3,200 Megawatthours. The project site is illustrated on **Figure 2.** Charging from or discharging to the electrical grid would be a 500kV gen-tie connecting the project substation to the POI within the existing PG&E Tesla Substation. The BESS Facility would include the following components:

- BESS Enclosures
- Power Conversion Systems (PCS)

- Medium voltage (MV) Collection System
- Project Substation, Control Building, and Telecommunications Facilities
- Access Roads
- Laydown Yards
- Stormwater Facilities and Outfall
- Site Security and Fencing, including fire detection system
- Operations and Maintenance Building

Project components are described in the following subsections. Table 1-1 summarizes the preliminary dimensions of major BESS facility components, and Table 1-2 summarizes the preliminary footprint/disturbance acreage associated with the BESS facility.

Table 1-1. Preliminary Dimensions of Major BESS Facility Components

Component	Quantity	Approximate Dimensions
BESS Enclosures	1,000*	20 ft x 8 ft x 10 ft (L x W x H)
PCS	140*	22 ft x 7 ft x 8 ft (L x W x H)
MV Collection system	--	Buried in trenches up to 5 ft x 10 ft (W x D)
Project Substation Area	1	500 ft x 450 ft; (5) 120 ft (H) (lightning masts)
Control Building	1	52 ft x 20 ft x 15 ft (L x W x H)
Wireless Communication Tower	1	18 ft x 18 ft x 199 ft (L x W x H)
Access Roads	--	20 ft (W) internal radii 25 ft minimum
Laydown Yards	4	Variable
Stormwater Detention Facilities	5	Variable
Stormwater Outfall	1	500 ft x 5 ft x 10 ft (L x W x D)
Security fencing	1	9 ft (H) 8 ft tall fence topped with 1 ft of barbed/razor wire
Operations and Maintenance Building	1	100 ft x 50 ft x 30 ft (L x W x H)

Notes: * The number of BESS enclosures and PCS units would depend on the manufacturer selected. The total number of BESS enclosures and PCS units may increase or decrease in the final design. It is also possible that the BESS units ultimately procured may incorporate the PCS units within the BESS enclosures.

Table 1-2. Preliminary Footprint of BESS Facility

Component	Permanent Disturbance
BESS Yards	13.3 acres
Project Substation	5.5 acres
Access Roads	6.6 acres
Laydown Yards	15.2 acres
Stormwater Detention Areas	9.3 acres
Stormwater Outfall	0.6 acres
Other*	7.2 acres

Total+	*57.7 acres*

Notes: * Other areas include maximum grading limits. The analyses assume that all areas used for the BESS facility are permanently disturbed and kept free of vegetation to comply with fire requirements.
+The total permanent disturbance acreage is a conservative estimate, and final designs may require fewer acres. Underground components within the BESS facility would be located within the footprint of above ground disturbance areas.

1.4.1 Battery Energy Storage System

The energy storage facility would utilize a modular and containerized BESS. There are several battery cell technologies commercially available, with one of the most common at present being lithium iron phosphate (LFP) cells (often colloquially referred to as 'lithium-ion'). LFP technology is considered one of the safest, most efficient, and commercially financeable energy storage technologies available on the market. The initial Project concept has been developed assuming an LFP technology. By the time the Project reaches the procurement stage, it is possible for other battery cell technology with proven safety and performance records to be suitable for the Project. Although the number and dimensions of the containers may change (as it does between LFP technology providers), the technology ultimately procured would result in potential environmental impacts substantially similar to, or less than, those analyzed based on this Project Description.

The BESS enclosures would be prefabricated off-site and arrive at the site ready to be installed and commissioned. Each modular BESS enclosure would include battery packs on racks, a battery management system (BMS), fire protection, and ancillary power electronics within a specialized steel-framed, non-occupiable container. The BESS enclosures would not exceed approximately 15 feet in height. The BESS enclosures may also have a heating, ventilation, and air conditioning (HVAC) system for optimal performance and safety. Power for the HVAC system, lighting, and other electrical systems would be provided through separate auxiliary power connection to the on-site project substation with connection lines installed above and/or below ground.

1.4.2 Power Conversion System

A PCS is a packaged and integrated system consisting of a bi-directional inverter, MV transformers, protection equipment, direct current (DC) and alternating current (AC) circuit breakers, harmonic filters, equipment terminals, and a connection cabling system. A PCS functions to both convert between DC/AC and change the voltage level from the MV collection voltage to the voltage output of the BESS enclosures.

The PCS would convert electric energy from AC to DC when the energy is transferred from the grid to the battery, and from DC to AC when the energy is transferred from the battery to the grid. Each PCS would also include transformers that convert the AC side output of the inverter between low and medium AC voltage to increase the overall efficiency of the BESS. Inverters within the PCS units would be unattended systems designed to operate in all conditions. The inverters would be monitored and controlled remotely, and there would be on-site disconnects for use in case of an emergency or a situation requiring unscheduled maintenance.

PCS units would be installed on concrete foundations and connected to multiple BESS enclosures with wiring and cables installed underground. All outside electrical equipment would be housed in the appropriate National Electrical Manufacturers Association rated enclosures.

1.4.3 MV Collection System

The MV collection system would include multiple components that connect the PCS units to the project substation including: underground conductor circuits, switchboards, switchgear, and panels at 34.5kV voltage. The conductors for the MV collection system would be installed underground during construction using trenching.

1.4.4 Project Substation

The project substation would include three main power transformers (MPTs) – two active and a live spare. When the BESS facility is charging, power from the regional electric transmission grid would be stepped down from 500kV to 34.5kV and sent from the project substation through the MV collection system and PCS units into the battery packs within the BESS enclosures. When the BESS facility is discharging, power from the battery packs within the BESS enclosures would be sent to the PCS units, stepped up to 34.5kV, and transported to the project substation through the MV collection system before being stepped up to 500kV at the MPTs and delivered back to the regional electric transmission grid. A prefabricated control building would be installed within the project substation area and contain an energy management system, metering and telecommunication equipment for communication with PG&E/ California Independent System Operator (CAISO) facilities and to support remote Project operations monitoring. The project substation area would also include five static masts for lightning protection and a wireless communication tower mounted with an antenna up to 15 feet in diameter for external telecommunications.

1.4.5 Access Roads

The Project's roadway system would include two new facility access roads and driveways, a perimeter road, and internal access roads. One of the new site access roads and driveways would be constructed from an existing private road near the northeastern portion of the site, and the other would be constructed from Patterson Pass Road near the southwestern portion of the site. A project substation access road would be constructed outside of the perimeter fence, connecting the northeast and southwest driveways, to facilitate substation access by third parties during operations. All new access roads, driveways, internal and perimeter roads would be bladed, compacted, and surfaced with aggregate. All internal roadways and private driveways would be constructed to meet access requirements for construction, O&M, and emergency response requirements.

1.4.6 Laydown Yards

The Project would include up to 4 laydown yards for equipment and material staging and storage during construction. These areas would also be used for worker parking during construction. The primary laydown yard would be located directly adjacent to the project substation area. The primary laydown yard would be bladed, compacted, and surfaced with aggregate, while additional laydown yards would be cleared of vegetation and surfaced with aggregate or other soil stabilizing materials. Portions of additional laydown yards may also be graded, if necessary. Landscape fabric may also be installed under the surface of all laydown yards to prevent vegetation growth, if required to comply with fire prevention standards. The O&M building, and required number of parking spaces for O&M staff, would be constructed within the primary laydown following construction of the BESS facility components.

If the BESS technology ultimately procured prior to construction requires larger BESS yards to accommodate BESS enclosures with larger dimensions, a greater number of BESS enclosures, or greater spacing requirements to comply with regulations, portions of the additional laydown yards may be used to accommodate larger BESS yards than those currently proposed. The proposed Project's preliminary layout, earthwork volumes, and project component dimensions assumed for environmental analyses in subsequent chapters are conservatively large to allow for design flexibility and Project schedule preservation.

1.4.7 Stormwater Facilities

The proposed BESS facility site currently consists of annual grassland with rolling topography. Regulatory standards require that volumes and flow rates of stormwater discharge after construction not exceed pre-development conditions. Stormwater generated on-site would flow to stormwater detention basins located along the periphery of the BESS facility site. Stormwater treatment and storage sizing would be designed to hold the anticipated runoff from a 100-year, 24-hour storm event in compliance with applicable regulations. In the event stormwater basins reach capacity, stormwater would be discharged from the detention basins via storm drainpipes and sheet flow at rates no greater than pre-development conditions following natural drainage patterns.

A stormwater drainage outfall utilizing a new 36-inch corrugated metal pipe or bioswale/ditch would be constructed from one or more of the detention basins located in the southwest portion of the site to the inlet of a new or existing culvert on the north side of Patterson Pass Road. Approximately 10 cubic yards of clean rip-rap would be placed as an energy dissipator at the outfall to discharge clean stormwater at or below current rates at the elevation of the ordinary high-water mark of the existing drainage on the south side of Patterson Pass Road.

1.4.8 Site Security

The BESS facility site would be enclosed with an 8-foot tall chain link fence topped with 1 foot of three-strand barbed wire or razor wire. The fence would be installed on the outside of the perimeter road. An additional fence with the same specifications would be installed around the project substation area. The fences would be required to prevent unauthorized access and to comply with human health and safety regulations. Gates would be installed at various access points along the fence lines and equipped with lock boxes to allow for authorized personnel (e.g., transmission service provider, O&M staff, emergency response) to access appropriate portions of the BESS facility site.

Lighting would only be in areas where it is required for safety, security, or operations. Low elevation (less than 14 feet) controlled security lighting would be installed at the project substation and around the BESS yards, in accordance with applicable requirements and regulations. Permanent motion-sensitive, directional security lights would be installed to provide adequate illumination around the substation area and points of ingress/egress. All lighting would be shielded and directed downward to minimize the potential for glare or spillover onto adjacent properties, compliant with applicable codes and regulations. Security cameras would be placed on site and monitored 24/7.

1.4.9 Fire Protection System

Fire protection would include multiple fire detection systems on-site and within the individual BESS enclosures. An infrared camera system would be installed throughout the BESS facility to achieve 100% of electrical infrastructure and trigger an alarm in case of an onsite fire. Each BESS enclosure would have a fire rating in conformance with the California Fire Code 2022. In addition, each BESS enclosure would contain an onboard BMS that monitors the appropriate state of individual battery cells and relays information 24-7. In the event of an anomaly, the system is designed to shut down and mitigate the hazard.

The Project's fire protection design would comply with California Fire Code 2022, Section 1207 Electrical Energy Storage Systems, which adopts the National Fire Protection Association's (NFPA) Standard for the Installation of Stationary Energy Storage Systems (NFPA 855). BESS enclosures would be Underwriters Laboratories (UL) listed, tested, and certified to the most rigorous international safety standards. UL independently tests equipment for compliance with the latest fire safety code requirements, and the methods were developed to minimize fire risk and safety concerns about battery storage equipment raised by fire departments and building officials in the United States.

Faults, mechanical damage, or manufacturing defects in lithium-ion batteries can cause thermal runaway, which can lead to fires or other hazards. Should a thermal runaway event occur, the BESS enclosures are designed and constructed in such a way that fire would not propagate from one enclosure to a neighboring enclosure. The Project's BESS enclosures, as part of the testing and listing process, would be subjected to destructive testing including fire testing. The Project's BESS enclosures would include the following UL certifications:

- UL 1642 – Standard for Lithium Batteries (cell level certification).
- UL 1973 – Standard for Batteries for Use in Stationary Applications (module level certification).
- UL 9540 – Standard for Energy Storage Systems and Equipment (system level certification).
- UL 9540A – Test Method for Evaluating Thermal Runaway Fire Propagation in Battery Energy Storage Systems.
- IEC 62619 – Standard for Battery Safety in Stationary Applications.

The Alameda County Fire District would review and comment on the facility fire protection and suppression plans.

1.4.10 Operations and Maintenance Building

Following construction of the BESS facility, an O&M building would be constructed within the primary laydown yard for the Project's anticipated three full-time operations staff. The O&M building would include parking, outside equipment and laydown areas, basic offices, meeting rooms, washroom facilities and climate-controlled storage for certain equipment and materials. A potable water storage tank would provide water for washroom and sanitary facilities, and sewage/wastewater would be collected in a separate tank. Potable water would be trucked to the water storage tank periodically during O&M, and sewage/wastewater would be pumped from the storage tank, transported offsite via truck, and disposed of at a sanitary dump station, as needed, during operations. The O&M building would be powered via a distribution line from the project substation.

1.4.11 Transmission and Interconnection Description, Design, and Operation

The Project would be interconnected to the regional electrical transmission grid via an approximately 2,884-foot long new single-circuit 500kV gen-tie line within a 200-foot-wide corridor between the project substation and the PG&E Tesla Substation. The Applicant would construct and own the portion of the gen-tie line between the project substation and the Point of Change of Ownership (POCO) transmission structure, and PG&E would construct and own the remaining portion of the gen-tie from the POCO to the POI within the Tesla Substation. The Project's transmission and interconnection facilities would include the following components:

- 500kV Gen-Tie Line including Transmission Structures and Conductors
- Fiber Optic Telecommunications Utility Poles and Fiber Optic Lines
- Access Paths
- Temporary Work Areas
- Interconnection Facilities within Existing PG&E Tesla Substation Footprint (PG&E constructed and owned)

The proposed route location was selected to minimize the number of existing utility crossings, cross existing utilities at the optimum locations, minimize the total gen-tie line length and number of transmission structures required, minimize the number of turning structures required, and enter the Telsa Substation as close as possible to the POI. The proposed transmission structures were sited to avoid potential impacts to environmental resources. Project components associated with transmission and interconnection facilities are described in the following subsections. No parks, recreational areas, or scenic areas are located within one mile of the proposed gen-tie route. Table 1-3 summarizes the preliminary dimensions of major transmission components, and Table 1-4 summarizes the preliminary new ground disturbance area associated with construction of the transmission and interconnection facilities. Section 4.13, *Visual Resources*, includes photographic simulations of a representative above ground section of the gen-tie route prior to construction and after construction.

Table 1-3. Preliminary Dimensions of Major Transmission Components

Component	Quantity	Approximate Dimensions
500kV Gen-Tie Line	1	Applicant Owned: 1,557ft long
		PG&E Owned: 1,327ft long
Substation Bay Dead-End Transmission Structure	2	Applicant Owned: 1 structure; up to 110ft above ground level; two seven-foot diameter foundations, installed up to 30ft deep; constructed within project substation area footprint
		PG&E Owned: 1 structure; up to 110ft above ground level; two seven-foot diameter foundations, installed up to 30ft deep; constructed within Tesla Substation footprint.

Angled Dead-End Transmission Structure	3	Applicant Owned: 2 structures; Up to 199ft above ground level; three nine-foot diameter foundations, installed up to 40ft deep, per structure
		PG&E Owned: 1 structure; Up to 199ft above ground level; three nine-foot diameter foundations, installed up to 40ft deep.
H-Frame Tangent Transmission Structure	1	Applicant Owned: Up to 199ft above ground level; two six-foot diameter foundations, installed up to 30ft deep.
Conductors	6	Two 2,300 kcmil 61W AAC “Pigweed” per phase. 30ft minimum ground clearance.
Overhead Shield Wire	2	Two 3/8in extra high strength 7-strand steel
Fiber Optic Utility Poles	16	Up to 40ft above ground level; up to 20in diameter wood poles direct embedded up to 8ft deep.
Fiber Optic Cables	2	All dielectric self-supporting fiber optic cable. Two redundant and diverse routes. Installed above ground on utility poles by Applicant from Project Substation to POCO. Installed by PG&E underground in trenches up to 2ft wide and 4ft deep between POCO and Tesla Substation.
Transmission Structure Access Path	1	Applicant Owned: 20ft wide; up to 1,750ft long
		PG&E Owned: 20ft wide; up to 950ft long
Transmission Line Corridor	1	200ft wide

Table 1-4. Approximate New Ground Disturbance Area Associated with Transmission and Interconnection Facilities

Component	Permanent Disturbance	Temporary Disturbance
	Applicant Portion	
Transmission Structure Pads	0.4 acres	-
Transmission Structure Access Path	0.7 acres	-
Fiber Optic Utility Poles	0.1 acres	-
Tension and Pulling Site	-	3.6 acres
Applicant Total	*~1.2 acres*	*~3.6 acres*
	PG&E Portion	
Transmission Structure Pad	0.2 acres	-
Transmission Structure Access Path	0.5 acres	-
Tension and Pulling Site	-	3.1 acres
PG&E Total	*~0.7 acres*	*~3.1 acres*

1.4.12 500kV Gen-Tie Line

The 500kv gen-tie line would originate at the project substation within the BESS facility site and extend southeast, crossing Patterson Pass Rd overhead until reaching the POCO structure. After reaching the POCO structure the route would proceed east to an angled dead-end structure outside of the Tesla Substation fence line before extending north to a new substation dead-end structure at the POI bay within the Tesla Substation footprint. The 200-foot-wide transmission corridor would be within the BESS facility lease area on APN 99B-7890-2-4 and within an easement on APN 99B-7890-2-6 until reaching the parcel's eastern boundary about 255 feet east of the POCO structure. Both parcels comprising the BESS facility lease area and transmission corridor easement are private lands owned by the same landowner. After crossing the eastern boundary of APN 99B-7890-2-6, the remaining portion of the gen-tie would be on the same PG&E-owned parcel that includes the 500kV Tesla Substation and POI. Table 1-3 includes the approximate number and dimensions of the three different types of transmission structures that would be used. The gen-tie would be designed consistent with the *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (APLIC 2006), where feasible.

1.4.13 Transmission Structure Access Path

A transmission structure access path would be located within portions of the transmission corridor outside of the BESS facility and Tesla Substation footprints and generally follow the centerline of the gen-tie. The portion of the transmission structure access path between Patterson Pass Road and the POCO structure would include a dry crossing of Patterson Run and require clean fill material (e.g., large cobbles, clean, native gravel, prefabricated mats) to be placed beneath the ordinary high water mark elevation for stabilization and erosion and sedimentation control.

1.4.14 Telecommunication Facilities

Telecommunications equipment would be installed between the control building at the project substation and the Tesla Substation to facilitate communication with PG&E/CAISO facilities. PG&E interconnection policies require two redundant fiber optic cables to be installed on diverse paths without a single point of failure (i.e., both fiber optic lines cannot be installed on a single set of structures). Between the control building within the project substation area and the POCO structure, the Applicant would install the two fiber optic lines above ground on separate utility structures within the transmission corridor. One route would be installed near the northern boundary of the transmission corridor and the other would be installed near the southern boundary of the transmission corridor. The fiber optic utility poles would be accessed via overland travel from the transmission structure pads or the transmission structure access path. At the POCO structure, each of the fiber optic cables would be brought down to an underground pullbox. PG&E would install the fiber optic cables underground from the pull boxes to the PG&E control building at the Tesla Substation. A microwave antenna installed on a communications tower within the project substation area, an optical ground wire installed on the 500kV structures, or placed underground within the transmission structure access path, between the project substation and POCO may be used in lieu of a second set of utility poles, if feasible.

1.4.15 Interconnection Facilities within Existing PG&E Tesla Substation Footprint

To facilitate interconnection of the BESS facility to the electric transmission grid, PG&E would need to install a substation bay dead-end transmission structure and expand the POI's 500kV breaker-and-a-half bay with a new circuit breaker.

1.4.16 Transmission System Impact Studies

The Applicant filed an Interconnection Request with CAISO in the Cluster 13 Interconnection Request window. CAISO, in cooperation with PG&E, prepared the Phase I Interconnection Study (February 12, 2021), and Phase II Interconnection Study (November 22, 2021). The Applicant entered into a Large Generator Interconnection Agreement with CAISO and PG&E on October 31, 2022. No Affected Systems controlled by CAISO or PG&E were identified during the interconnection study process. Non-CAISO systems potentially affected by the Project and other Cluster 13 projects are Western Area Power Administration and Modesto Irrigation District. The Applicant is working with both system operators to identify specific impacts and will take all reasonable steps to address potential reliability system impacts prior to the initial synchronization of the Project.

1.5 Construction

The following sections detail the approximate construction schedule and workforce, construction activities, estimated water use, and materials handling proposed by the Project.

1.5.1 Schedule and Workforce

The Project is anticipated to be built over an approximately 18-month period from the onset of site preparation activities through energization. Following energization, testing and commissioning would take place over 6 months. Initial mobilization and site preparation is anticipated to begin no later than Q1 2026 and testing and commissioning is anticipated to conclude no later than Q2 2028. It is anticipated that construction crews would work 8 to 10 hours per day, with work occurring Monday through Friday. Overtime, night work, and weekend work would be used only as necessary to meet the project schedule or complete time-sensitive or safety critical work. All work schedules would comply with applicable California labor laws, county regulations, and the Project Labor Agreement. Estimated durations of construction activities are presented in Table 1-5. However, the duration of particular construction activities may be affected by weather, unanticipated site conditions, the supply chain, and coordination between the different activities.

The expected average workforce for each construction activity is also included in Table 2.

Table 1-5. Estimated Construction Activity Duration and Average Workforce Expected

Construction Activity	Estimated Duration	Average Workforce Expected (Number of Employees)
Site Preparation	8 Weeks	25
Civil Work and Grading	24 Weeks	55
Foundations and Underground Equipment	16 Weeks	50
BESS Equipment Installation	20 Weeks	60
Project Substation Installation	32 Weeks	20
Gen-Tie Foundations and Structure Erection	8 Weeks	10
Gen-Tie Line Stringing and Pulling	2 Weeks	10

Table 1-5. Estimated Construction Activity Duration and Average Workforce Expected

Construction Activity	Estimated Duration	Average Workforce Expected (Number of Employees)
Testing and Commissioning	22 Weeks	10
PG&E Interconnection Facility Upgrades within Tesla Substation	26 Weeks	10

1.5.2 Sequencing

During construction activities, multiple crews would be working on the site with various equipment and vehicles. The total number of construction workers (consisting of laborers, craftsmen, supervisory personnel, support personnel, and construction management personnel) would range from approximately 5 to 200 workers, depending on the phase of construction. It is estimated that construction would require the vehicle trips and equipment listed in Table 1-6.

Table 1-6: BESS Project - Construction Equipment and Usage Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Site Preparation	50	10	600	Graders	2	8
				Rubber Tired Loaders	2	8
				Skid Steer Loaders	2	8
				Tractors/Loaders/ Backhoes	2	8
Site Grading and Civil Work	110	76	30,240	Graders	4	8
				Rollers	4	8
				Rubber Tired Loaders	4	8
				Skid Steer Loaders	4	8
				Tractors/Loaders/ Backhoes	4	8
				Pavers	2	8
				Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	1	8
				Cement and Mortar Mixers	1	4
				Rock Crushers	4	8
Foundations and Underground	100	10	20	Paving Equipment	2	8
				Rollers	2	8
				Plate Compactors	2	8

Table 1-6: BESS Project - Construction Equipment and Usage Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
Equipment Installation*				Cement and Mortar Mixers	2	8
				Bore/Drill Rig	3	8
				Tractors/Loaders/ Backhoes	6	8
				Excavators	2	8
				Rubber Tired Dozers	2	8
				Trenchers	4	8
				Skid Steer Loaders	2	8
BESS Installation*	160	20	2,636	Air Compressors	2	8
				Cranes	3	8
				Generator Sets	4	8
				Rough Terrain Forklifts	2	8
				Skid Steer Loaders	2	8
Project Substation Installation	40	20	0	Air Compressors	2	8
				Aerial Lifts	6	8
				Cranes	2	8
				Generator Sets	2	8
				Rough Terrain Forklifts	2	8
Gen-tie foundation and tower erection	28	2	0	Bore/Drill Rig	1	8
				Cranes	2	8
				Forklifts	2	8
				Boom Truck	1	8
				Flat Bed Truck	1	8
				Cement and Morter Mixer	1	8
				Bucket Lift Truck	1	8
Gen-tie stringing and pulling	24	2	0	Heavy-duty Truck (Puller)	1	8
				Heavy-duty Truck (Tensioner)	1	8
				Forklifts	2	8
				Generator Sets	2	8
				Tractors/Loaders/ Backhoes	2	8
				Boom Truck	1	8
				Trencher	1	8
PG&E Interconnection Facility Upgrades	40	20	0	Air Compressors	4	8
				Cranes	2	8
				Excavators	2	8
				Generator Sets	4	8
				Rough Terrain Forklifts	2	8

Table 1-6: BESS Project - Construction Equipment and Usage Assumptions

Construction Phase	One-Way Vehicle Trips			Equipment		
	Average Daily Worker Trips	Average Daily Vendor Truck Trips	Total One-Way Haul Truck Trips	Equipment Type	Quantity	Usage Hours
				Skid Steer Loaders	2	8
				Tractors/Loaders/ Backhoes	2	8
				Trencher	1	8
Testing and Commissioning	52	0	0	Rough Terrain Forklift	1	8
				Off-Highway Trucks	3	8
Decommissioning	40	2	2,640	Concrete/Industrial Saws	2	8
				Cranes	2	8
				Rubber Tired Dozers	2	8
				Tractors/Loaders/ Backhoes	2	8

Notes: * The numbers in this table conservatively assume that foundations and BESS equipment installation related to augmentation occurs during initial construction of the facility. Construction of foundations and BESS equipment installation for augmentation may occur during O&M periodically within the BESS facility footprint.

1.5.3 Site Preparation

Environmental clearance surveys would be performed at the Project site prior to commencement of construction activities. The limits of construction disturbance areas delineated in the final approved engineering design packages would be surveyed and staked. Initial ground disturbing activities in preparation for construction would include installation of erosion and sediment control measures prior to start of major earthworks activities. Rough grading and grubbing/vegetation removal would be performed where required to accommodate site drainage and allow construction equipment to access the site. Detention basins and stormwater facilities would be created for hydrologic control. The construction contractor would be required to incorporate applicable best management practices (BMPs) including the guidelines provided in the California Stormwater Quality Association's Construction BMP Handbook (CASQA 2019), as well as a soil erosion and sedimentation control plan to reduce potential impacts related to construction of the proposed Project. Stabilized construction entrances and exits would be installed at driveways to reduce tracking of sediment onto adjacent public roadways.

Site preparation would be consistent with applicable BMPs and the Bay Area Air Quality Management District's Fugitive Dust Rules. Site preparation would involve the removal and proper disposal of existing debris that would unduly interfere with Project construction or the health and safety of on-site personnel. Dust-minimizing techniques would be employed, such as placement of wind control fencing, application of water, and application of dust suppressants. All applicable governmental requirements and BMPs would be incorporated into the construction activities for the Project site.

Vegetation on the site would be removed where necessary to ensure the BESS facility is free from combustible vegetation to allow for fire protection and defensible space. Where feasible, in compliance with fire protection requirements, vegetation root mass within appropriate portions of the BESS facility lease area on the outside of the perimeter and substation access roads would be left in place for soil stabilization. However, the environmental analyses in subsequent sections conservatively assume that all areas within the maximum anticipated grading limits of the BESS facility would be permanently disturbed.

1.5.4 Site Grading and Civil Work

Following site preparation activities, grading and civil work would commence. Construction activities during this phase would include excavation and grading of the Project site. Earthwork on the site is ultimately anticipated to result in nearly balanced cut and fill volumes, but the preliminary designs conservatively assume that grading would include up to approximately 588,018 cubic yards (cy) of cut and up to approximately 344,900 cy of fill, resulting in up to approximately 243,118 cy of export material. As appropriate, all, or a portion of, of the Project's excess material resulting from earthwork may be used beneficially used on-site for the construction of berms or other onsite needs. Where appropriate, excess material would be processed in one or more different types of rock crushing equipment depending on the requirements of the various potential beneficial uses onsite. Blasting may be required if large boulders are encountered during excavation and grading.

Conventional grading would be performed throughout the Project site but minimized to the maximum extent feasible to reduce unnecessary soil movement that may result in dust. Land-leveling equipment, such as a smooth steel drum roller, would be used to even the ground surface and compact the upper layer of soil to a value recommended by a geotechnical engineer for structural support. Following major civil work within the BESS facility site, site access roads and driveways, the perimeter and substation access roads, and interior roadways to access the laydown areas and BESS yards would be graded, compacted, and surfaced with gravel or aggregate. Class II road base would be imported to create necessary compaction under the equipment, as determined by geotechnical testing and Project specifications. Once the roadways have been constructed, the project perimeter fence and access gates would be constructed.

1.5.5 Foundations and Underground Equipment Installation

Following completion of major site grading and civil work, equipment foundations and below grade equipment would be installed. A grounding grid and underground conduit would be installed below grade beneath the project substation area and BESS components. Typical ground grids consist of direct-buried copper conductors with copper-clad ground rods arranged in a grid pattern. After installation of the grounding grid, the area would be backfilled, compacted, and leveled followed by application of an aggregate rock base. A containment area within the MPT foundations would be sized to hold the full volume of oil within the MPTs. The MPT foundations within the substation area are anticipated to be concrete slab foundations poured into excavations up to 10 feet deep. Foundations for the control building, static masts, other aboveground substation equipment, O&M building, BESS enclosures, PCS units, DC/DC converters, and BESS auxiliary transformers and panels are anticipated to be pile foundations embedded up to 40 feet below ground level. Depending on soil conditions, the piles may be drilled or driven and set with a slurry. However, some of these project components may be installed on concrete slab foundations depending on the geotechnical conditions at the final locations.

Additional underground work would include trenching for the placement of underground electrical and communications lines, including the MV collection system, AC and DC cables, and fire alarm cable. The wires would either be installed in conduit, cable-trays, or direct-buried, depending upon final design and application

1.5.6 BESS and Project Substation Equipment Installation

Where possible, major equipment would be delivered directly to its permanent location and offloaded directly into place with a crane or heavy equipment. Where staging or sequencing does not allow, equipment would be stored at one of the laydown areas near its permanent location and installed at a later date. Major aboveground equipment would be the MPTs and other project substation components, control building, BESS enclosures, PCS units, DC/DC converters, BESS auxiliary transformers and panels, and O&M building.

Electrical work would include installing cables, terminations, and splices. Electrical wiring would be installed underground, at-grade, and above ground, depending on the application and location. The wires would either be installed in conduit, cable-trays, or direct-buried, depending upon final design and application.

1.5.7 Gen-Tie Structure Erection

Environmental clearance surveys would be performed within the gen-tie corridor prior to commencement of construction activities. The gen-tie corridor boundaries, gen-tie centerline, telecommunications route centerlines, and transmission structure access path would be surveyed and flagged. Initial activities would include the installation of erosion and sediment control measures and materials to facilitate the dry crossing of Patterson Run, and preparation of the transmission structure and fiber optic utility pole work areas. The transmission structure access path may be bladed, compacted, and surfaced with gravel where necessary to facilitate transmission structure deliveries and construction equipment access. The surface of the access path would be at-grade to allow water to sheet flow across the gen-tie corridor, as it currently does. Access to the fiber optic utility pole locations would be via overland travel from the transmission structure pads or access path. Overland travel and temporary construction activities associated with the gen-tie and telecommunications facilities may occur anywhere within the 200-foot-wide transmission corridor and 50 feet on either side of the transmission corridor boundary. Vegetation at the transmission and fiber optic utility pole work areas would be trimmed, mowed, or removed. At locations where gen-tie line structures and fiber optic utility poles would be installed, minor cuts may be required where the foundation would be installed.

Cast-in-place concrete foundations would be installed by placing reinforcing steel and a structure stub or anchor bolt cage into the foundation hole, positioning the stub, and encasing it in concrete. Each transmission structure foundation would be set on anchor bolts on top of the foundation with cranes. Fiber optic utility poles would be direct embedded in holes up to 8 feet deep. Holes would be excavated using a truck-mounted drill rig or standalone auger rig. Poles would be delivered on a flat-bed trailer and hoisted into place with a crane. The annular space between the poles and holes would be backfilled with concrete or soil. Excavated spoil material not used for backfilling would be spread around the structure work areas.

1.5.8 Gen-Tie Stringing and Pulling

Conductors would be strung between transmission structures with heavy duty trucks and a telescoping boom lift. Cables would be pulled through one segment of the transmission line at a time. To pull cables, truck-mounted cable-pulling equipment is placed alongside the first and last towers or poles in a segment. Power pulling equipment is used at the front end of the segment, while power braking or tensioning equipment is used at the back end. The conductors are then pulled through the segment and attached to the insulators. Equipment is then moved to the next segment; the front end pull site previously used becomes the back end pull site for the next segment. After conductors have been pulled into place in a section, the conductor tension is increased to achieve a ground clearance of at least 30 feet prior to moving to the next section.

Three tension and pulling sites are anticipated to facilitate construction of the gen-tie: one within the BESS facility footprint near the first angled dead-end structure, one at the POCO structure, and another at the PG&E-constructed angled dead-end structure near the Tesla Substation fence line.

1.5.9 PG&E-Owned Gen-Tie Segment and Interconnection Facilities within Tesla Substation Footprint

PG&E would construct the segment of the gen-tie between the POCO and the POI within the Tesla Substation, and the fiber optic routes between the POCO and the PG&E control building within the Tesla Substation footprint. The Applicant would bring the fiber optic cables to underground pull boxes at the POCO structure, and PG&E would install the segment of the fiber optic cables between the POCO and control building in conduit placed in underground trenches. The trenches are anticipated to be up to three feet wide, and the trenches for the redundant routes would need to be at least 10 feet apart to meet PG&E's diverse path requirements. It is anticipated that PG&E would install the trenches within the access road to the angled dead-end structure outside the Tesla Substation fence line. However, PG&E may install the cables within existing roadways or other pre-disturbed areas along the perimeter of the substation fence depending on final design and routing.

PG&E would also construct the interconnection upgrades within the Tesla Substation footprint at the POI. These upgrades would include erection of a new substation bay dead-end transmission structure and expanding the POI's existing 500kV substation bay-and-a-half bay with a new circuit breaker. Other activities within the Tesla Substation footprint and/or property boundary may include relocation or modification of existing PG&E infrastructure. Additional potential disturbance acreage associated with PG&E's work to facilitate interconnection of the Project to the grid are not anticipated to exceed 5 additional acres of disturbance beyond the estimates in Table 1-2.

1.5.10 Construction Water Use

During construction, an estimated 16,000,000 million gallons (~49.1 acre-feet) of untreated water would be required for common construction-related purposes, including but not limited to dust suppression, soil compaction, and grading. Dust-control water may be used during ingress and egress of on-site construction vehicle equipment traffic and during the construction of the Project. A sanitary water supply line would not be required during construction because restroom facilities would be portable units, serviced by licensed providers, and water and sewage from the restroom facilities would be stored in onsite tanks and serviced by trucks. Drinking water would be provided via portable water coolers. Construction water is anticipated to be purchased from a local water purveyor and trucked to the site.

1.5.11 Solid and Non-hazardous Waste

The Project would produce a small amount of solid waste from construction activities. This may include paper, wood, glass, plastics from packing material, waste lumber, insulation, scrap metal and concrete, empty nonhazardous containers, and vegetation waste. This waste would be segregated, where practical, for recycling. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III (non-hazardous waste) landfill.

1.5.12 Hazardous Materials

The hazardous materials used for construction would be typical of most construction Projects of this type. Materials may include small quantities of gasoline, diesel fuel, oils, lubricants, solvents, detergents, degreasers, paints, ethylene glycol, dust palliatives, herbicides, and welding materials/supplies. A hazardous materials business plan would be prepared prior to commencement of construction activities. The hazardous materials business plan would include a complete list of all materials used on site and information regarding how the materials would be transported and in what form they would be used. This information would be recorded to maintain safety and prevent possible environmental contamination or worker exposure. During Project construction, material safety data sheets for all applicable materials present at the site would be made readily available to on-site personnel.

1.5.13 Hazardous Waste

Small quantities of hazardous waste would most likely be generated over the course of construction. This waste may include waste paint, spent construction solvents, waste cleaners, waste oil, oily rags, waste batteries, and spent welding materials. Workers would be trained to properly identify and handle all hazardous materials. Hazardous waste would be either recycled or disposed of at a permitted and licensed treatment, recycling, or disposal facility in accordance with law. All hazardous waste shipped off site would be transported by a licensed hazardous waste hauler .

1.6 Commissioning

As part of Project construction activities, and after installation, equipment will be tested and commissioned. Commissioning work will be completed by qualified personnel, and in accordance with various codes, standards and specifications including the Institute of Electrical and Electronic Engineers, National Electrical Code (NFPA 70), International Electrical Testing Association, specific provisions of NFPA, and the relevant OEM / manufacturers installation and commissioning manuals. Documentation necessary for commissioning will include (but is not limited to) complete sets of electrical plans, itemized equipment descriptions, control narratives, and other procedural requirement such as persons or entities to notify when equipment has become available for acceptance tests.

Commissioning will include testing of mechanical, electrical, fire protection, and other systems at substantial completion. Systems to be commissioned and tested include (but are not limited to) BESS enclosures, PCS units, auxiliar service transformers, MV collection system, DC cables, Supervisory Control and Data Acquisition (SCADA) systems, power backup systems, and fire protection system. Performance testing will also be completed to ensure charge and discharge performance of the systems as designed and in accordance with the utility requirements. Full details of the commissioning activities will be made available in a commissioning plan, prepared by the BESS supplier and construction contractor and reviewed by the Engineer of Record, as part of the construction documentation package.

1.7 Operations and Maintenance

Once constructed, the Project would operate 7 days per week, 365 days per year. The facility would be remotely monitored by the original equipment manufacturer or an affiliated company. Project operations would be monitored remotely through the SCADA system and by the Project's anticipated three full-time operations staff members.

Onsite maintenance would be required, which would include replacement of inverter power modules, filters, and miscellaneous electrical repairs on an as-needed basis. During operation of the project substation, O&M staff would visit the substation periodically for switching and other operation activities. Maintenance trucks would be utilized to perform routine maintenance, including but not limited to equipment testing, monitoring, repair, routine procedures to ensure service continuity, and standard preventative maintenance. Typically, one major maintenance inspection would take place annually.

Batteries within utility-scale BESS facilities degrade with use over time, leading to a loss of capacity. To maintain the Project's capacity in compliance with interconnection requirements and commercial contracts, periodic augmentation by installing new batteries and related equipment within the Project site would occur to maintain the capacity over an approximate 35-year life. Augmentation would include constructing new foundations, installing BESS equipment on the foundations, and completing electrical work within the existing Project footprint. The construction sequencing and equipment usage assumptions in Tables 3 and 4 above, and environmental analyses in subsequent Chapters, conservatively assume that all initial BESS equipment and augmentation BESS equipment are constructed at the same time.

1.7.1 Solid and Nonhazardous Waste

The Project will produce a small amount of waste associated with maintenance activities, which could include broken and rusted metal, defective or malfunctioning electrical materials, empty containers, and other miscellaneous solid waste, including typical refuse generated by workers. Most of these materials would be collected and delivered back to the manufacturer or to recyclers. Non-recyclable waste would be placed in covered dumpsters and removed on a regular basis by a certified waste-handling contractor for disposal at a Class III landfill.

1.7.2 Hazardous Materials

Limited amounts of hazardous materials would be stored or used on the site during operations, including diesel fuel, gasoline, and motor oil for vehicles; mineral oil to be sealed within the transformers; and lead-acid-based batteries for emergency backup. Appropriate spill containment and cleanup kits would be maintained during operation of the Project. A spill prevention control and countermeasures plan would be developed for site operations.

1.7.3 Hazardous Waste

Fuels and lubricants used in operations would be subject to the spill prevention control and countermeasures plan to be prepared for the proposed Project. Solid waste, if generated during operations, would be subject to the material disposal and solid waste management plan to be prepared for the proposed Project.

1.8 Decommissioning

In general, the BESS would be recycled at the expiration of the Project's life (estimated to be 35 years). Most parts of the proposed system are recyclable. Batteries include lithium-ion, which degrades but can be recycled or repurposed. Steel, wood, and concrete from the decommissioned facilities would be recycled. Metal and scrap equipment and parts that do not have free-flowing oil may be sent for salvage. Materials three feet or more below the ground surface would be left in place.

Fuel, hydraulic fluids, and oils would be transferred directly to a tanker truck from the respective tanks and vessels. Storage tanks and vessels would be rinsed and transferred to tanker trucks. Other items that are not feasible to remove at the point of generation, such as smaller container lubricants, paints, thinners, solvents, cleaners, batteries, and sealants, would be kept in a locked utility structure with integral secondary containment that meets Certified Unified Program Agencies and Resource Conservation and Recovery Act requirements for hazardous waste storage until removal for proper disposal and recycling. It is anticipated that all oils and batteries would be recycled at an appropriate facility. Site personnel involved in handling these materials would be trained to properly handle them. Containers used to store hazardous materials would be inspected regularly for any signs of failure or leakage. Additional procedures would be specified in a Hazardous Materials Business Plan closure plan submitted to the Certified Unified Program Agencies. Transportation of the removed hazardous materials would comply with regulations for transporting hazardous materials, including those set by the Department of Transportation, the U.S. Environmental Protection Agency, California Department of Toxic Substances Control, California Highway Patrol, and California State Fire Marshal.

1.9 Project Site Selection

The Project site and related facilities were selected taking into consideration engineering constraints, site geology, environmental impacts, water, waste and fuel constraints, and electric transmission constraints, among other factors. The Project site was selected in furtherance of the Project Objectives detailed in Section 2.1.3 above.

1.10 Report Structure and Key Personnel

This report is divided into five chapters. Following this introduction, Chapter 2 reviews the natural environment and the cultural context and Chapter 3 provides the methods used to complete the current inventory. The records search, survey results, and tribal correspondence are discussed in Chapter 4. Chapter 5 summarizes the cultural resources work completed for this Project to-date and provides recommendations for further treatment of the cultural resources consistent with the California Environmental Quality Act (CEQA) and Section 106 of the National Historic Preservation Act (NHPA). Several appendices are attached to this report. Confidential Appendix A includes confidential records search results; Appendix B contains Native American Heritage Commission (NAHC) coordination documents; and Appendix C provides the California Department of Parks and Recreation (DPR) 523 forms and pertinent documentation for resources encountered during survey.

Gregory Wada and Victoria Martin conducted the intensive pedestrian survey. Nicholas Hanten, MA, drafted archaeological elements of the technical report. Adam Giacinto, MA, RPA, acted as archaeological principal investigator, reviewed management recommendations, and provided QA/QC for the technical report. Architectural Historians, Kathryn Haley, MA, Patricia Ambacher, MA and Danielle Baza, BA, prepared all built environment report contributions. Nicholas Hanten, Adam Giacinto, Kathryn Haley, and Patricia Ambacher meet Secretary of the Interior Professional Qualification Standards for archaeology and architectural history and have extensive experience working within local, state, and federal regulatory contexts.

1.11 Regulatory Context

This cultural resources investigation was completed to satisfy both CEQA.

1.11.1 National Register of Historic Places

The National Register of Historic Places (NRHP) is the United States' official list of districts, sites, buildings, structures, and objects worthy of preservation. Overseen by the National Park Service (NPS), under the U.S. Department of the Interior, the NRHP was authorized under the NHPA, as amended. Its listings encompass all National Historic Landmarks, as well as historic areas administered by NPS.

NRHP guidelines for the evaluation of historic significance were developed to be flexible and to recognize the accomplishments of all who have made significant contributions to the nation's history and heritage. Its criteria are designed to guide state and local governments, federal agencies, and others in evaluating potential entries in the NRHP. For a property to be listed in or determined eligible for listing, it must be demonstrated to possess integrity and to meet at least one of the following criteria:

The quality of significance in American history, architecture, archaeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

A. That are associated with events that have made a significant contribution to the broad patterns of our history; or
B. That are associated with the lives of persons significant in our past; or
C. That embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction; or
D. That have yielded, or may be likely to yield, information important in prehistory or history.

Integrity is defined in NRHP guidance, *How to Apply the National Register Criteria,* as “the ability of a property to convey its significance. To be listed in the NRHP, a property must not only be shown to be significant under the NRHP criteria, but it also must have integrity” (NPS 1997). NRHP guidance further asserts that properties must have been completed at least 50 years before evaluation to be considered for eligibility. Properties completed fewer than 50 years before evaluation must be proven to be “exceptionally important” (Criteria Consideration G) to be considered for listing.

A historic property is defined as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the NRHP maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. The term includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the NRHP criteria” (36 CFR Sections 800.16(i)(1)).

1.11.2 California Register of Historic Resources and CEQA

In California, the term historical resource includes but is not limited to “any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.” (Public Resources Code [PRC] section 5020.1(j).) In 1992, the California legislature established the California Register of Historical Resources (CRHR) “to be used by state and local agencies, private groups, and citizens to identify the state’s historical resources and to indicate what properties are to be protected, to the extent prudent and feasible, from substantial adverse change.” (PRC section 5024.1(a). The criteria for listing resources on the CRHR were expressly developed to be in accordance with previously established criteria developed for listing in the NRHP, enumerated below. According to PRC Section 5024.1(c)(1–4), a resource is considered historically significant if it (i) retains “substantial integrity,” and (ii) meets at least one of the following criteria:

- Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage.
- Is associated with the lives of persons important in our past.
- Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values.
- Has yielded, or may be likely to yield, information important in prehistory or history.

In order to understand the historic importance of a resource, sufficient time must have passed to obtain a scholarly perspective on the events or individuals associated with the resource. A resource less than fifty years old may be considered for listing in the CRHR if it can be demonstrated that sufficient time has passed to understand its historical importance (see Cal. Code Regs., tit. 14, section 4852(d)(2)).

The CRHR protects cultural resources by requiring evaluations of the significance of prehistoric and historic resources. The criteria for the CRHR are nearly identical to those for the NRHP and properties listed or formally designated as eligible for listing in the NRHP are automatically listed in the CRHR, as are the state landmarks (numbered 770 and higher) and points of historical interest designated by the State Historical Resources Commission. The CRHR also includes properties designated under local ordinances or identified through local historical resource surveys.

1.11.3 California Environmental Quality Act

As described further below, the following CEQA statutes and CEQA Guidelines are of relevance to the analysis of archaeological, historic, and tribal cultural resources:

- PRC section 21083.2(g) defines "unique archaeological resource."
- PRC section 21084.1 and CEQA Guidelines section 15064.5(a) defines "historical resources." In addition, CEQA Guidelines section 15064.5(b) defines the phrase "substantial adverse change in the significance of an historical resource;" it also defines the circumstances when a project would materially impair the significance of an historical resource.
- PRC section 21074(a) defines "tribal cultural resources."
- PRC section 5097.98 and CEQA Guidelines section 15064.5(e): Set forth standards and steps to be employed following the accidental discovery of human remains in any location other than a dedicated ceremony.

PRC sections 21083.2(b)-(c) and CEQA Guidelines section 15126.4: Provide information regarding the mitigation framework for archaeological and historic resources, including examples of preservation-in-place mitigation measures; preservation-in-place is the preferred manner of mitigating impacts to significant archaeological sites because it maintains the relationship between artifacts and the archaeological context, and may also help avoid conflict with religious or cultural values of groups associated with the archaeological site(s).

More specifically, under CEQA, a project may have a significant effect on the environment if it may cause "a substantial adverse change in the significance of an historical resource." (PRC section 21084.1; CEQA Guidelines section 15064.5(b). If a site is either listed or eligible for listing in the CRHR, or if it is included in a local register of historic resources, or identified as significant in a historical resources survey (meeting the requirements of PRC section 5024.1(q)), it is a "historical resource" and is presumed to be historically or culturally significant for purposes of CEQA (PRC section 21084.1; CEQA Guidelines section 15064.5(a)). The lead agency is not precluded from determining that a resource is a historical resource even if it does not fall within this presumption (PRC section 21084.1; CEQA Guidelines section 15064.5(a)).

A "substantial adverse change in the significance of an historical resource" reflecting a significant effect under CEQA means "physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of an historical resource would be materially impaired" (CEQA Guidelines section 15064.5(b)(1); PR Code section 5020.1(q)0. In turn, the significance of an historical resource is materially impaired when a project:

- Demolishes or materially alters in an adverse manner those physical characteristics of an historical resource that convey its historical significance and that justify its inclusion in, or eligibility for, inclusion in the California Register; or
- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion in a local register of historical resources pursuant to section 5020.1(k) of the PRC or its identification in an historical resources survey meeting the requirements of section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion in the California Register as determined by a lead agency for purposes of CEQA.

(CEQA Guidelines section 15064.5(b)(2).) Pursuant to these sections, the CEQA inquiry begins with evaluating whether a project site contains any "historical resources," then evaluates whether that project will cause a substantial adverse change in the significance of a historical resource such that the resource's historical significance is materially impaired.

If it can be demonstrated that a project will cause damage to a unique archaeological resource, the lead agency may require reasonable efforts be made to permit any or all of these resources to be preserved in place or left in an undisturbed state. To the extent that they cannot be left undisturbed, mitigation measures are required (Section 21083.2[a], [b], and [c]).

Section 21083.2(g) defines a unique archaeological resource as an archaeological artifact, object, or site about which it can be clearly demonstrated that without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information.
- Has a special and particular quality such as being the oldest of its type or the best available example of its type.
- Is directly associated with a scientifically recognized important prehistoric or historic event or person.

Impacts to non-unique archaeological resources are generally not considered a significant environmental impact (PRC section 21083.2(a); CEQA Guidelines section 15064.5(c)(4).) However, if a non-unique archaeological resource qualifies as tribal cultural resource (PRC 21074(c); 21083.2(h)), further consideration of significant impacts is required.

CEQA Guidelines section 15064.5 assigns special importance to human remains and specifies procedures to be used when Native American remains are discovered. As described below, these procedures are detailed in PRC section 5097.98.

1.11.4 California Health and Safety Code

California law protects Native American burials, skeletal remains, and associated grave goods, regardless of their antiquity, and provides for the sensitive treatment and disposition of those remains. Health and Safety Code section 7050.5 requires that if human remains are discovered in any place other than a dedicated cemetery, no further disturbance or excavation of the site or nearby area reasonably suspected to contain human remains shall occur until the County coroner has examined the remains (section 7050.5b). PRC Section 5097.98 also outlines the process to be followed in the event that remains are discovered. If the coroner determines or has reason to believe the remains are those of a Native American, the coroner must contact the NAHC within 24 hours (section 7050.5c). The NAHC will notify the Most Likely Descendant (MLD). With the permission of the landowner, the MLD may inspect the site of discovery. Recommendations from the tribe must be provided within 48 hours of notification of the MLD by the NAHC. The MLD may recommend means of treating or disposing of, with appropriate dignity, the human remains and items associated with Native Americans.

1.11.5 Alameda County Register

The Alameda County Register is a list of landmarks, historic preservation districts, contributing resources and structures of merit. Resources eligible for listing on the Alameda County Register must meet one or more of the following criteria:

a. It is associated with events that have made a significant contribution to the broad patterns of the history of the County, the region, the state or the nation;

b. It is associated with the lives of persons significant in the County's past;

c. It embodies the distinctive characteristics of a type, period or method of construction;

d. It represents the work of an important creative individual or master;

e. It possesses high artistic values; or

f. It has yielded, or may be likely to yield, information important in the prehistory or history of the County, the region, the state or the nation.

The resource must have integrity of location, design, setting, materials workmanship, feeling and association. Integrity shall be judged with reference to the particular criterion or criteria specified above (Alameda County 2024).

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1.12 Area of Potential Impacts

The area of potential impacts (API) is the study area delineated to assess potential impacts from the construction and operation of the Project on both archaeological and historic built environment resources. The API encompasses the geographic area or areas within which the Project may directly or indirectly cause a substantial adverse change in the significance of a known or unknown historical resource. A substantial adverse change in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of the resource is materially impaired (14 CCR Section 15064.5[b][1]). Under CEQA, material impairment of a historical resource is considered a significant impact (or effect), which can be direct, indirect, or cumulative.[1]

A direct or primary effect on a historical resource is one that is caused by the Project and occurs at the same time and place (14 CCR Section 15358[a][1]). Examples of direct effects that are caused by, and immediately related to, the Project include, but are not limited to, demolition, destruction, relocation, and alteration of a historical resource as a result of ground disturbance and other construction activities. Direct effects, however, are not limited to physical effects and, in certain circumstances, can be visual, vibratory, auditory, or atmospheric in nature if the effect is immediate and it results in the material impairment of the significance of a historical resource. Visual intrusions within the viewshed of a historical resource, for example, could result in the material impairment of the resource's integrity of setting if an unencumbered view of the surrounding area or a specific area is a characteristic that contributes to the significance of the resource. Similarly, operational noise that exceeds the ambient level of a sensitive noise receptor can cause material impairment to a historical resource that derives part or all its significance from an inherently quiet auditory setting.[2] Finally, atmospheric intrusions, such as those caused by the introduction of high levels of fugitive dust emissions or chemical pollutants, can result in adverse effects that directly and physically affect biological landscape features that have been identified as historical resources for the purposes of CEQA. Overall, while direct effects clearly include physical effects, they may also include other types of effects that are visual, vibratory, auditory, or atmospheric in nature if the effect is caused by and occurs at the same time and place as the Project and there is no other intervening cause between the activities or components of the Project and the historical resource.

By contrast, an indirect or secondary effect is a reasonably foreseeable effect caused by the Project that occurs later in time or is farther removed in distance. Indirect effects may include growth-inducing effects and other effects related to induced changes in the pattern of land use, population density, or growth rate, and related effects on air and water and other natural systems, including ecosystems (14 CCR Section 15358[a][2]). Because these types of effects are not immediately related to the Project, they are considered secondary effects.

Cumulative impacts refer to two or more individual effects that, when considered together, are considerable or compound or increase other environmental impacts. The individual effects may be changes resulting from a single project or a number of separate projects. The cumulative impact from several projects is the change in the environment that results from the incremental impact of the Project when added to other closely related past, present, and reasonably foreseeable probable future projects. Cumulative impacts can result from individually

1 As used in the CEQA Guidelines and 14 CCR Section 15358, the terms "effects" and "impacts" are synonymous in this report.

2 Construction noise that exceeds the ambient level of a sensitive noise receptor is not analyzed because it is considered a temporary impact that would not have an adverse effect on historical resources because it would not cause physical damage and would not permanently alter or diminish the integrity of such resources. Temporary construction noise would not result in a substantial adverse change in the significance of a historical resource and, therefore, would not cause a significant impact under CEQA.

minor but collectively significant projects taking place over a period of time (14 CCR Section 15355[a]-[b]). The API for cumulative impacts, if any exist, would include the API for direct effects, indirect effects, or both because in order for a cumulative impact to exist, a historical resource must first be directly or indirectly affected by the project.

The API for Cultural Resources is illustrated on **Figure 3**. Explanation of the API considerations for archaeological resources and built environment resources is noted below.

Archaeological Resources API Delineation

The API for archaeological resources includes all areas where ground-disturbing activities associated with the proposed Project have the potential to impact archaeological resources. Proposed ground disturbance activities with potential impacts to archaeological resources within the API are limited to the extent of the Project Boundary. The Project API is approximately 127.4 acres and consists of the primary project site as well as selected off-site activity areas along roadways and intersections that would require recontouring of existing disturbed areas to accommodate truck turning movements. The maximum vertical extent of the API is not expected to exceed 15 feet in depth.

Built Environment API Delineation

Delineation of the API considered the proposed project activities in conjunction with historic era built resources that are 45 years of age or older (those built-in or prior to 1979) that may sustain impacts or effects due to the construction or operation of the project.3 The Project proposes to connect to the existing PG&E Tesla Substation (P-01-010502). As such the extent of this property is included in the API and this facility is addressed in this report. The Tesla-Salado-Manteca 115 kV Transmission Line (P-39-005337) PG&E transmission located directly adjacent to the northwestern edge of the API will not sustain any direct or indirect impacts that would result in damage, destruction, or degradation of historic significance, if applicable. As such, the transmission lines were not included in the API.

[3] While the 50-year threshold is generally used for listing resources in the NRHP and CRHR, the California Office of Historic Preservation's (OHP) *Instructions for Recording Historical Resources* recommends recording "any physical evidence of human activities over 45 years . . . for the purposes of inclusion in the OHP's filing system." It also allows for the "documentation of resources less than 45 years . . . if those resources have been formally evaluated, regardless of the outcome of the evaluation." Further, the guidance notes that the 45-year threshold recognizes that there is commonly a five-year lag between resource identification and the date that planning decisions are made, and thus it explicitly encourages the collection of data about resources that may become eligible for the NRHP or CRHR within that planning period (OHP 1995: 2).

SOURCE: Bing Maps 2023

DUDEK

0 190 380 Feet

FIGURE 2

Project Site

Potentia Viridi BESS Project

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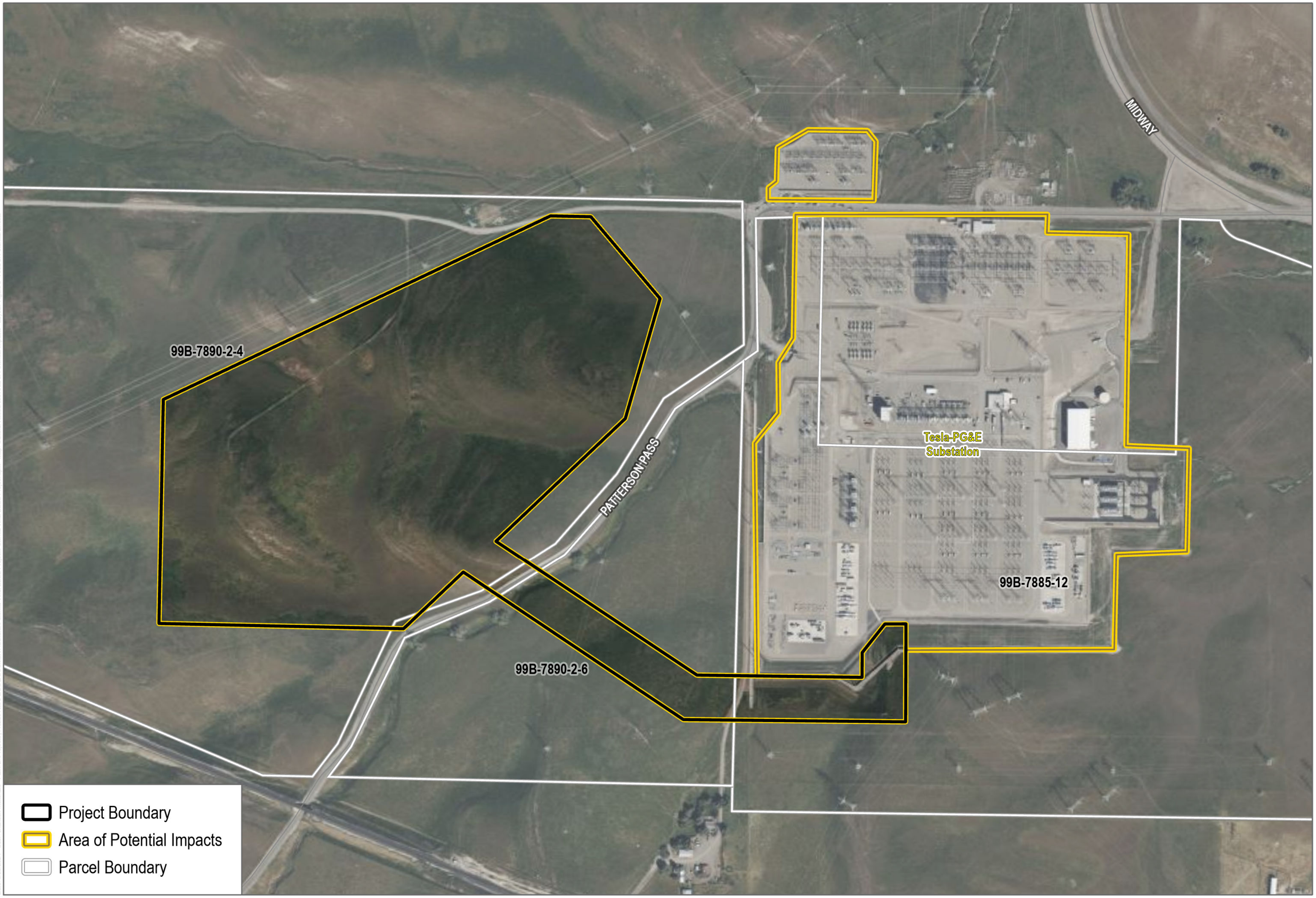

SOURCE: Bing Maps 2023, County of Alameda 2022

DUDEK

0 290 580 Feet

FIGURE 3

Cultural Resources Area of Potential Impacts

Potentia Viridi BESS Project

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2 Project Context

2.1 Environmental Context

The Project falls at the transition between the Coast Ranges and Great Valley geomorphic provinces at the margin of the Sacramento Valley. Portions of the API have been substantially modified by construction roads and agricultural activities. The Sacramento Valley has two major river systems, the Sacramento and American Rivers, which carry water that originates in the Sierra Nevada south and west into the Sacramento-San Joaquin River Delta. Elevation in the API ranges from approximately 380 to 523 feet above mean sea level and the topography of the API is flat.

This region is characterized by a Mediterranean climate, which includes dry hot summers and cool wet winters. The region within which the Project area occurs receives an average of about 12 inches of precipitation annually. Annual temperatures range from 38.3°F to 92.6°F, with the coolest temperatures in January and warmest temperatures in July (WRCC 2023).

2.2 Cultural Context

This context provides an overview of the prehistoric and historic periods in the API. This context is based on the 2021 *Archaeological Resources Inventory Report for the Delta Dams Delta Dams Rodent Burrow Remediation Project at Dyer Reservoir and Dam and Patterson Reservoir and Dam* prepared by Dudek (Dudek 2021).

2.2.1 Paleoindian Period (11,550–8,550 BC)

While few sites of Paleoindian age have been identified in the region, occupation is known to date to at least 11,000 years ago (Dudek 2021: 16). Most of the evidence for a Paleoindian presence in the valley has been limited to surface finds of fluted projectile points, which are typically regarded by North American archaeologists as late Pleistocene early Holocene time markers. Numerous specimens of these fluted, concave base (Clovis or “Clovis-like”) projectile points and other artifacts presumed to be Paleoindian in age (e.g., “humpies” and crescents) (Dudek 2021: 16) have been collected from surface contexts in several locations in the San Joaquin Valley. Unfortunately, most of these discoveries have been made by amateur collectors, many of whom were collecting illegally, so virtually no provenance has been provided for these artifacts. This has resulted in an enormous and irretrievable loss of data for understanding the Paleoindian Period in this region.

One of the most significant Paleoindian locations in this region is the Witt Site (CA-KIN-32) on the southwest shore of Tulare Lake, which contained fluted projectile points, scrapers, crescents, and Lake Mojave series points (Dudek 2021: 16). The Witt Site, at an elevation of 192 feet, signifies a “major lake level for a considerable span of time” (Dudek 2021: 16). Subsequent archaeological investigations conducted in the early 1990s near the Witt Site resulted in the recovery of additional fluted projectile points, as well as later types, indicating sustained occupation of the Tulare Lake Basin dating from the Paleoindian Period to contact (Dudek 2021: 16). These and other isolated finds elsewhere indicate an initial occupation of the region at the end of the Pleistocene and early Holocene.

2.2.2 Archaic Period (8,550 BC to AD 1,100)

The Archaic Period in California is generally characterized by gradual development of specific regional adaptations and the proliferation and regional differentiation of subsistence strategies and tool types as people because increasingly sedentary, or at least reoccupied a greater number of locations with greater frequency, resulting in the formation of a larger number of regionally or functionally distinct sites. The Archaic Period in the California chronology is subdivided into three phases: Lower Archaic, Middle Archaic, and Upper Archaic.

2.2.2.1 Lower Archaic Period (8,550 to 5,550 BC)

As with the Paleoindian Period, Lower Archaic deposits tend to be isolated finds lacking stratigraphic context. Stemmed projectile points, flaked stone crescents, and other distinctive flaked stone artifact types are associated with this period, several of which have been found in the vicinity of Tulare Lake (Dudek 2021: 16). It is believed that human subsistence during this period was based largely on the hunting of large game and fishing (Dudek 2021: 16). Grinding implements, such as mortars, pestles, millingstones, and handstones, appear infrequently during this time in the archaeological record. Other types of artifacts in these assemblages include hand-molded baked clay net weights, Olivella and Haliotis shell beads and ornaments, and charmstones.

2.2.2.2 Middle Archaic Period (5,550 to 550 BC)

The onset of the Middle Archaic in Central California marked a substantial change in the climate, with warmer, dryer conditions resulting in the shrinking and eventual drying out of the lakes of the San Joaquin Valley, a phenomenon common among other Pleistocene Lakes throughout the Western United States during this time. This also coincided with the formation of new wetland habitats as rising sea levels pushed inland, forming the Sacramento–San Joaquin River Delta (Delta). These climatic processes resulted in substantially more stable landforms as fans and floodplains stabilized within the Delta, making buried Middle Archaic deposits much more common than those from the Early Archaic.

Middle Archaic sites are typified by the distinct adaptive pattern of more generalized and logistically organized subsistence practices and residential stability along river corridors (Dudek 2021: 17). While hunting, fowling, and fishing continue to be important aspects of subsistence, the prevalence of groundstone tools, including early examples of mortars and pestles, suggest an increased reliance on vegetal resources, likely the result of greater residential stability driving resource intensification (Dudek 2021: 17). The continued importance of fishing is indicative in the adoption of new fishing technologies, including gorge hooks, composite bone hooks, and spears, along with abundant ichthyofaunal remains, identified at Middle Archaic sites in Contra Costa, Sacramento, and San Joaquin Counties (Dudek 2021: 17). Other artifact types characteristic of the period include Olivella and Haliotis beads and other ornaments, distinctive spindle-shaped charmstones, cobble mortars, chisel-ended pestles, and large projectile points (implying use of the atlatl) (Dudek 2021: 17).

2.2.2.3 Upper Archaic Period (550 BC to AD 1,100)

The transition to the Upper Archaic Period coincides with the onset of late Holocene environmental conditions, during which time the climate was markedly cooler, wetter, and more stable. The archaeological record from the Upper Archaic is better understood and represented, and is marked by an increase in cultural diversity, with numerous regional distinctions in burial posture, artifact styles, and other elements of material culture (Dudek 2021: 17).

The Upper Archaic record is marked by the development and proliferation of numerous bone tools and implements, as well as widespread production and trade of manufactured goods, including Olivella shell beads, Haliotis ornaments, and obsidian bifacial roughouts and ceremonial blades (Dudek 2021: 17). Subsistence economies during the Upper Archaic focused on seasonally structured resources that could be harvested and processed in bulk, including acorns, salmon, shellfish, deer, and rabbits. The proliferation of mortars and pestles and archaeobotanical remains indicate that the first widespread reliance on acorns occurred during this period (Dudek 2021: 17). Large, mounded village sites also first occurred in the Delta region during this period (Dudek 2021: 17).

On the whole, the Archaic Period is characterized by increasing residential stability, cultural diversity, and subsistence intensification though time.

2.2.3 Emergent Period (AD 1,100 to 1,750)

The archaeological record for the Emergent Period is the most substantial and well-documented of any period in the region, and the assemblages and adaptations represented therein are the most diverse. The Emergent Period also marks the onset of cultural traditions consistent with those documented at European contact and the disappearance of several previous archaeological traditions. Large villages developed in areas of the Sacramento Valley, and the number of mound villages and smaller hamlets increased across the region. Subsistence economies during the Emergent Period were increasingly reliant on fishing and plant gathering, with increased subsistence intensification evident in the increased reliance on small seeds and a more diverse assortment of mammals and birds (Dudek 2021: 18). Perhaps the most notable technological change during the Emergent Period is the introduction of the bow and arrow, which replaced atlatl technology as the favored hunting implement sometime between AD 1100 and AD 1300 (Dudek 2021: 18). The material record during the Emergent Period is also marked by the introduction of new Olivella bead and Haliotis ornament types, and eventually the introduction of Clamshell Disk beads (Dudek 2021: 18). The Emergent Period in general is marked by an increase in population size and the number of residential sites and villages throughout the region, with increasing regional variability and resource intensification.

2.2.3.1 Ethnohistoric Period (post-AD 1750)

The history of Native American communities prior to the mid-1700s has largely been reconstructed through later mission-period and early ethnographic accounts. The first records of the Native American inhabitants of the region come predominantly from European merchants, missionaries, military personnel, and explorers. These brief, and generally peripheral, accounts were prepared with the intent of furthering respective colonial and economic aims and were combined with observations of the landscape. They were not intended to be unbiased accounts regarding the cultural structures and community practices of the newly encountered cultural groups. The establishment of the missions in the region brought more extensive documentation of Native American communities, though these groups did not become the focus of formal and in-depth ethnographic study until the early twentieth century. The principal intent of these researchers was to record the pre-contact, culturally specific practices, ideologies, and languages that had survived the destabilizing effects of missionization and colonialism. This research, often understood as "salvage ethnography," was driven by the understanding that traditional knowledge was being lost due to the impacts of modernization and cultural assimilation. Alfred Kroeber applied his "memory culture" approach (Dudek 2021: 18) by recording languages and oral histories within the region.

Based on ethnographic information, it is believed that at least 88 different languages were spoken from Baja California Sur to the southern Oregon state border at the time of Spanish contact (Dudek 2021: 18). The distribution of recorded Native American languages has been dispersed as a geographic mosaic across California through six primary language families (Dudek 2021: 18).

Victor Golla has contended that one can interpret the amount of variability within specific language groups as being associated with the relative "time depth" of the speaking populations (Dudek 2021: 18). A large amount of variation within the language of a group represents a greater time depth than a group's language with less internal diversity. One method that he has employed is by drawing comparisons with historically documented changes in Germanic and Romantic language groups. Victor Golla has observed that the "absolute chronology of the internal diversification within a language family" can be correlated with archaeological dates (Dudek 2021: 18). This type of interpretation is modeled on concepts of genetic drift and gene flows that are associated with migration and population isolation in the biological sciences.

The API falls near the northwestern periphery of the area occupied Yokuts speaking groups, bordered to the west by Costanoan (Ohlone) and to the north by Plains Miwok populations during the Ethnohistoric Period. These three languages form a branch ("Yok-Utian") of the Penutian linguistic group, with two distinct sub-branches: Yokuts, and the more closely related Costanoan and Miwok ("Utian") (Dudek 2021: 19). The Yok-Utian language group is believed to have originated in the Great Basin and been subsequently brought to California in two separate migration events, an initial Utian migration that reached the Delta region approximately 2,500 to 2,000 cal BC, and a later Yokut migration, possibly as late as 600 to 700 cal AD (Dudek 2021: 19). Kroeber's interpretation of the ethnographic distribution of the major sub-dialects of the Yokut language suggests that the original diversification of Yokut speaking groups in California originated in the southern San Joaquin Valley and subsequently spread northward (Dudek 2021: 19). Golla notes that the most specialized subdialects of Yokut, and thus presumably the oldest variants, are from the southern end of Yokut territory, suggesting that the Yokut language group likely originated in the vicinity of the Lower Kern River or Tehachapi Pass, with the language diversifying as it spread north along the San Joaquin Valley and southern Sierra Nevada foothills (Dudek 2021: 19).

2.2.3.1.1 Northern Valley Yokuts

Ethnohistoric inhabitants of the area now representing the Project site would have likely spoken Tamukamne, a dialect of Delta (or Far Northern Valley) Yokuts centered approximately 15 miles west of Lathrop (Dudek 2021: 19). People speaking Delta Yokuts dialects occupied the lower course of the San Joaquin River from the Merced River east of Newman to the Delta sloughs north of Stockton. Little is known about Tamukamne, or any Delta Yokuts dialects, due to the effects of early missionization activities and Euro–American settlement, with the only linguistic documentation coming from late nineteenth- and early twentieth-century word lists. Despite the paucity of linguistic data, it appears that these dialects can be classified as Valley Yokuts on phonological and morphological grounds, though several portions of the language are non-cognate with other Yokuts dialects and word borrowing from the adjacent Miwok and Costanoan languages is evident (Dudek 2021: 19). The similarity between Delta Yokuts and Valley Yokuts has generally led to the grouping of Delta Yokuts with the Northern Valley Yokuts in ethnographic works describing the ethnographic lifeways of the region.

Broadly defined, Northern Valley Yokuts refers to groups speaking several distinct dialects who inhabited the lower San Joaquin River watershed and its tributaries extending from Calaveras River in the north to approximately the large bend of San Joaquin River eastward near Mendota. The lower San Joaquin River meanders through the territory making bends, sloughs, and marshes full of tule reeds. Farther from the rivers and marshes, the valley floor would have been dry and sparely vegetated grassland with occasional stands of sycamores, cottonwoods, and willows along stream courses and groves of valley oaks where the soil was rich enough (Dudek 2021: 19). In contrast to the limited diversity of available plants, the fauna of the region was both plentiful and diverse on land and water. Fish, freshwater shellfish, migratory waterfowl, tule elk, pronghorn antelopes, and other smaller animals would all have been available and often seasonally abundant.

Northern Valley Yokuts habitation was most common and dense in areas situated in proximity to rivers and major tributaries, though the drier plains were occupied at lower density, more often on the east side of the river (Kroeber 1976). West of the river, populations were much sparser and concentrated in the foothills on minor waterways. The concentration of the population near waterways is unsurprising given that many of the Northern Yokuts subsistence staples, particularly fish and waterfowl, would have been most available in these areas. The focus on fishing is seen in the material culture consisting of net sinkers and harpoons, likely used from rafts constructed from tule reed bundles (Dudek 2021: 20). Gathered vegetable resources would also have been an important part of subsistence, particularly acorns, although tule roots and various seeds were also gathered. These vegetal resources would likely have been processed in portable mortars—often made from white oak, although stone mortars were occasionally used (Dudek 2021: 20).

Due to abundant riverine resources, the Northern Valley Yokuts were generally sedentary, occupying the same locations year-round, though there were times of seasonal disbandment for harvesting wild plant resources such as acorns and seeds (Dudek 2021: 20). Principal settlements were perched atop low mounds on or near riverbanks, where their elevated position prevented inundation during seasonal flooding (Dudek 2021: 20). Northern Valley Yokuts' dwellings were constructed of tule reed woven mats places over a pole frame oval or round structure. These structures were usually 25 to 40 feet in diameter and would belong to a single family (Dudek 2021: 20). This is in contrast to the larger multifamily dwellings erected sometimes by the Southern Yokuts. In addition to dwellings, earth-covered ceremonial sweat lodges and larger ceremonial assembly chambers were constructed, with each community likely having one or more of these buildings (Dudek 2021: 20).

As with most aspects of their lifeways, little can be said for certain about the political organization among the Northern Valley Yokuts, but it is believed that these groups were organized into tribes of as many as 300 individuals, guided by a head man or chief (Dudek 2021: 20). Most members of the tribe congregated in a single principal settlement, although smaller hamlets of two or three houses also existed.

Based on the information about population density and settlement distribution, it is possible to conjecture that the total population of the Northern Valley Yokuts may have been quite large prior to European contact. However, the Northern Valley Yokut population saw sharp and devastating decline from disease and relocation to coastal missions nearly immediately after Spanish contact (Dudek 2021: 20). This only increased with the large influx of cattle ranching and Anglo Americans after the gold rush (Dudek 2021: 20).

2.2.3.1.2 Costanoan (Ohlone) and Plains Miwok

As alluded to above, while the Project site is within area occupied ethnographically by the Delta Yokuts, the location is very close to the ethnographic borders with neighboring Costanoan-speaking groups to the west and Plains Miwok groups to the North. The Yokuts occupants of the area would likely have had frequent contact with these other groups, and therefore a brief description of these other groups is warranted.

Costanoan (Ohlone)

The area immediately west of the Project site was occupied by Ohlone groups that spoke a dialect of Costanoan (Dudek 2021: 20). Costanoan-speaking groups occupied much of the Bay Area, from the San Francisco and San Ramone down to the Monterey Bay and Salinas. Due the effects of missionization, relatively little is known about the Ohlone ethnographically and their material culture has largely been reconstructed from the archaeological record. Like their neighboring Yokuts, Ohlone communities were generally organized into autonomous tribelets of 200 to 400 people, which were overseen by a headman and council of elders, and occupied villages near the coast or major drainages (Dudek 2021: 21). These primary settlements were supplemented with temporary camps located in prime resource-collecting areas.

Subsistence practices were similar to those of the Yokuts, with a heavy reliance on terrestrial vegetal food sources including acorn, nuts, seeds, greens, and bulbs. The Ohlone also pursued terrestrial game including deer, pronghorn, tule elk, rabbit, and waterfowl. Whereas the Yokuts relied heavily on riverine resources, marine resources made up an important component of the Ohlone diet, in particular shellfish and sea mammals. The Ohlone traded shell ornaments, animal furs, salt, shellfish, and other items with neighboring Miwok, Yokuts, and Patwin for bows and arrows, basketry materials, pigments, and feather blankets (Dudek 2021: 21). Thus, it is likely that the area around the Project site would have been frequently traversed by both Yokuts and Ohlone groups in pursuit of trading partners.

Plains Miwok

The area to the north of the Project site would have been occupied by the Plains Miwok–speaking groups who inhabited the region of the lower Mokelumne and Cosumnes Rivers, roughly bounded by the Yolo Basin to the west, the American River to the north, the Sierra Nevada to the east, and the Calaveras River to the south. These groups were similar to the Yokuts in their subsistence settlement system with settlements situated on rivers, and a reliance on fishing, hunting, and collecting vegetative resources. These groups may have been more logistically mobile than the Yokuts, with satellite sites used during hunting excursions and for pre-processing of collected plant resources, such as acorns; however, the primary settlements were likely permanently occupied (Dudek 2021: 21). As with the Yokuts, the Plains Miwok were organized into tribelets, although the basic social unit was the patrilineal extended family. The Plains Miwok are somewhat better documented ethnographically than either the Yokuts or Ohlone, though not nearly as well documented as the Eastern Miwok groups of the Sierra Nevada foothills.

In general, the ethnographic groups surrounding Project site shared very similar subsistence and settlement systems relying on intensive processing of vegetal resources in addition to a reliance on riverine or marine resources when plentiful. However, dialects and other social practices did vary in non-trivial ways. Unfortunately, the effects of missionization have made more detailed reconstruction of the lifeways and social practices of ethnographic period inhabitants of the region very difficult

2.2.4 Historic Context

This historic context is provided to ascertain the significant themes are present used to understand any identified previously recorded or newly documented resources in the API. The context was taken from the 2011 *Final Cultural Resources Technical Report Kelso Substation to Tesla Substation 230 kV Reconductoring Project* prepared by AECOM (AECOM 2011).

2.2.4.1 Spanish Period (1769–1822)

As early as 1769, the Spanish explorer José Francisco Ortega led an expedition through present-day Alameda County. Other Spanish expeditions in the region were led by Pedro Fages, Juan Bautista de Anza, and Pedro Font. During this period, the Spanish began to set up a series of missions and presidios along the California coast, including Mision del Gloriosisimo Patriarca Senor San Jose (currently known as Mission San Jose), located just south of San Jose and approximately 23 miles to the west of the study area. The presidios served as military forts for protection from competing interests and the native population. Once the missions and presidios were established, the government set up secular towns (pueblos) nearby and populated them with colonists from Mexico. The missions served as agricultural and educational centers for the surrounding rural area (AECOM 2011: 11).

2.2.4.2 Mexican Period (1822–1848)

In 1822, Mexico gained independence from Spain. The mission system was secularized in 1834 and Mexico granted large tracts of land to individuals and families resulting in the rancho system becoming more widely established throughout present-day California. Vast tracts of land granted in the vicinity of the study area included the 8,880-acre Rancho Las Positas (located west of the study area) which then Mexican Governor Juan Alvarado granted to Robert Livermore and Jose Noriega in 1839, and Rancho de Los Medranos granted to John Marsh and located north and west of the study area along the San Joaquin River and Suisun Bay in present day Antioch. Rancho El Pescadero patented by Andres Pico and H.M. Nagle in 1865, was located to the northeast of the study area in what is now San Joaquin County. Cattle ranching dominated other agricultural activities and the development of the hide and tallow trade with the United States increased during the early part of this period (AECOM 2011: 11).

In 1848, the United States defeated Mexico in the Mexican-American War, and Mexico surrendered its Alta California land through the Treaty of Guadalupe Hidalgo. That same year, the Gold Rush brought hundreds of immigrants to the state and San Francisco Bay became one of the world's busiest seaports, dominating shipping and transportation in the American west until the last years of the 19th century. Attracted by the fertile land and mild climate of the Bay Area, many miners chose to stay to start a new life. The region, including the study area, soon became one of the leading agricultural hubs of California, with agriculture, dairy farming, and livestock grazing serving as the principal industries of the period. The bay's regional importance only increased once the transcontinental railroad reached its western terminus in Alameda on September 6, 1869 (AECOM 2011: 11).

2.2.4.3 American Period (Post-1848)

Early in 1853, Alameda County separated from Contra Costa County and in June of that year, the eastern part of the county was established and named Murray Township for an early settler, Michael Murray. Alameda County was composed of five townships—including Murray Township—where, especially in the Livermore Valley, settlement increased, and the big ranchos began to be broken up after 1850. Complicated rules and laws pertaining to rancho ownership also contributed to the decline of the rancho and by the late 19th century, very few ranchos remained intact as settlers moved into the surrounding towns and hamlets. In the hills where the project is located and surrounding areas, the typical parcel ranged from a quarter section (160 acres) to a section (640 acres) of land, with several over 1,000 acres. In the valleys, 80 to 160 acre-farms were the norm, although larger holdings ranging up to several thousand acres were not uncommon. While the majority of valley farms included buildings, few of the hill parcels—which were mostly used for livestock grazing—had been improved (AECOM 2011: 11–12).

2.2.4.4 Pacific Gas & Electric Company

In the first decades of the 20th century, the rapid spread of electric power fueled the growth of American industry and brought with it an unprecedented standard of living. Gas lighting was commonplace in major American cities by the middle decades of the 19th century, but in the second half of that century, inventions and innovations by Thomas Edison, Nikola Tesla, George Westinghouse, and others made it possible for virtually every town in the United States to have electricity (Williams 1997: 170-174). These advancements made possible the long-distance transmission of power—first demonstrated by the success of the 22-mile transmission line installed between Folsom and Sacramento, California in 1895. In California, the state's resources and geography made the long-distance transmission of hydropower both practical and necessary (AECOM 2011: 12).

In many ways the history of PG&E parallels the history of 20th century California. Incorporated in San Francisco in 1905, PG&E has helped shape the utility industry and played an important role in the growth and development of the state's economy. The company began as the merger of two power holding companies, the San Francisco Gas and Electric Corporation, one of San Francisco's oldest corporations, and the California Gas and Electric Corporation, a relatively recent consolidation. San Francisco Gas and Electric owned steam-power generating facilities that complemented California Gas and Electric's hydro-electric resources by picking up the slack during peak periods and when winter freeze or summer drought reduced the flow of water through the company's turbines in the Sierra. By 1930, the company had become one of the state's largest landowners, one of the nation's largest hydroelectric producers, and a major supplier of natural gas for home and industry (AECOM 2011: 13).

The virtue of long-distance transmission of electricity is the ability to move the power at high volumes and then step it down before delivery to the user. To accomplish this and other tasks, such as transferring bulk power around a utility network, electrical utility companies built distribution substations at various points along the transmission lines to decrease the power or to accumulate and transfer power from various sources. With its hydro-power sources located in the Sierra Nevada, PG&E could send high voltage power more than 100 miles along its transmission lines then step it down once before delivering to the customer. California differed from other parts of the country in other ways as well. In the east and midwest, for example, most power came from fossil fuels. When power demand dropped, companies could shut down facilities. In California, it became more practical to keep the hydro-power plants running whenever possible and to develop new classes of customers that would use power at different times (AECOM 2011: 13).

At the beginning of the 20th century, the San Francisco Bay Area was the state's most heavily populated and industrialized region, and more than 60 percent of California's 1.5 million people lived in urban areas. California's growth was explosive—between 1900 and 1910, California added almost 900,000 people and more than 1 million in the following decade. While the people moved toward the cities, agricultural production also grew. Since the beginning of the 20th century, farmers had been adapting electricity to their poultry operations, dairy farms, and replacing windmills with steam, gasoline, and then electric pumps. The 1910s brought a more systematic approach to the development of irrigation in California, especially in the Central Valley. PG&E worked with water users to generate power from the water before it was released into irrigation canals. This process would accelerate in the following decades as the state and federal governments would play an increasingly active role in the development of water and power (AECOM 2011: 13).

PG&E invested in waterpower even while the price of steam power dropped as the crude oil industry matured and prices for fuel oil declined. By the end of the 1910s, the company supplied more than one-third of the power in the state. With America's direct involvement in World War I in 1917, fears that the diversion of fuel oil and the inability to meet an expected upsurge in demand led the California State Railroad Commission (precursor to the Public Utilities Commission) to insist that power companies interconnect transmission lines to increase power availability. First implemented in California, the concept of superpower would spread throughout the United States during and after the war. When PG&E and Southern California Edison introduced extra high voltage transmission lines in 1924, the age of superpower had arrived in earnest (AECOM 2011: 13-14).

As the state's population grew and became more urbanized in the 1910s, the demand for electrical power increased for everything from home appliances to industrial presses. As a result, PG&E expanded its hydroelectric capacity on the South Yuba and Bear Rivers and built the Drum-Cordelia-Marin power transmission line to bring the power to the north end of the Bay Area. It also constructed the Newark Substation, a modern substation and switching station near the East Bay town of Newark, to accommodate power from the Halsey and Wise powerhouses on the South Yuba River in Placer County. The Wise Tower line carried power from the South Yuba power houses through the Newark Substation to the southern end of the Bay. As additional power from its Salt Spring and Tiger Creek power houses on the Mokelumne River came on line in the early 1930s, the company expanded the Newark Substation to receive power flowing into the station from the 110-mile transmission line built from the Sierra foothills (AECOM 2011: 14).

In the early 1920s, the company began to refer to itself as P.G. and E. Company through the publication of its monthly newsletter, *P.G. and E. Progress*. The company reinforced its commitment to California with the construction of a 17-story headquarters building in 1925, designed by the renowned architectural firm of Bakewell and Brown. The structure reflects the era's emphasis on beauty and the company's focus on design and functionality, evident in nearly everything the company built in its first decades, including its power plants, substations, and other transmission facilities. In the first decades of the 20th century, PG&E adapted the Spanish Renaissance style of architecture for many of its structures because it suggested the company's linkage to the pioneer era of California. The Halsey and Wise powerhouses and the Newark Substation were typical in this regard (AECOM 2011: 14).

California became virtually self-sufficient in energy in the 1930s. The company's discovery of natural gas supplies and its completion of a pipeline from Southern California to San Francisco and one the from gas fields in Texas to California were supplemented in the 1930s by the maturing California's oil industry, and the completion of Shasta and Hoover Dams. However, by the 1940s, World War II growth in population and industrial production left the state in need of new energy supplies. The war helped establish momentum for steam power in California and as cheap oil became available after the war, nearly three-quarters of all planned and newly-built generating capacity in the state was designed for thermal steam power (AECOM 2011: 14).

In the decade after World War II, PG&E embarked on an unprecedented building program. California's population grew by more than 50 percent in the 1940s to nearly 10.5 million people in 1950. PG&E added more than 125,000 new customers in that year alone, its largest on record. The company spent more than 1 billion dollars on construction projects including new steam plants in San Francisco, Bakersfield, Eureka and at Moss Landing on Monterey Bay, as well as 14 new hydro powerhouses on the Pit, Feather, and Yuba Rivers. In addition to new power facilities, the company expanded and remodeled several older facilities and added new substations. The Vaca-Dixon Substation, dating to the 1910s, was connected to a new substation in Moraga, and new substations at Midway and Tesla were built to control delivery of power from the northern to the southern San Joaquin Valley (AECOM 2011: 14-15).

As fuel prices climbed in the 1960s and 1970s, and the environment became a higher priority among Americans, the company turned its focus toward conservation and alternative energy sources. In 1978, the Public Utility Regulatory Policies Act mandated that utilities buy power from independent producers at prices set by state utility commissions. In the 1980s, the company began purchasing energy created by wind turbines, located primarily in the Altamont Pass area, and by the end of the 1980s had become the country's largest purchaser of alternative energy. The company also since became an industry leader in conservation and alternative energy sources. Energy created in the wind turbine farm at Altamont, for example, is funneled through its Tesla substation, where it is distributed throughout the network. In 1985, PG&E opened the Diablo Canyon Power Plant, the company's second nuclear-powered facility (AECOM 2011: 15).

In 1995, PG&E became a subsidiary of the PG&E Corporation. Since passage of the Public Utility Regulatory Act, many of the company's largest customers dropped PG&E in favor of independent energy producers or built their own power facilities. As a result, the company lost significant revenue in the last decade of the century and found itself with a significant surplus of energy. PG&E relied on a "grow and build" strategy for most of its first century and, like the state of California, its growth was spectacular at times. Presently, the company's focus is on maintaining its system as well as conservation and alternative energy sources (AECOM 2011: 15).

2.2.4.4.1 Development of Tesla Substation

Construction of Tesla Substation began in 1947 and was completed in 1948. Originally planned for only 38 acres, the first three buildings constructed were a temporary construction warehouse, shop building, and the control building . To the north of these buildings were the associated bus, switch, and other electrical transmission structures. In 1947, PG&E's plans to spend $55 million dollars towards expanding its facilities and transmission lines into the San Joaquin Valley included the construction of Tesla Substation. As technology improved, electrical demands increased, and wind-generators increased in numbers in the area, PG&E continued to expand and construct updated control rooms as well as bus/switch structures at the substation in the late-1950s, 1960s, 1980s, and 1990s (AECOM 2011: 32).

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3 Research and Field Methods

The Secretary of the Interior has issued Standards and Guidelines for Archeology and Historic Preservation (48 FR 44720–44726), which are used for the identification and evaluation of historic properties and to ensure that the procedures are adequate and appropriate. The identification and evaluation of historic properties are dependent upon the relationship of individual properties to other similar properties. Information about properties regarding their prehistory, history, architecture, and other aspects of culture must be collected and organized to define these relationships which is the intent of the current inventory.

3.1 California Historical Resources Information System Records Search

A records search of the California Historical Resources Information System (CHRIS) was completed for the current proposed Project site and a 1-mile radius on behalf of Dudek by staff at the Central California Information Center (CCaIC) and Northwest Information Center (NWIC) on August 1, 2023 and August 30, 2023 (Confidential Appendix B). This search included a review of their collection of mapped prehistoric, historical, and built-environment resources, Department of Parks and Recreation Site Records, technical reports, historical maps, and local inventories. Additional consulted sources included the NRHP, California Inventory of Historical Resources/CRHR and listed Office of Historic Preservation Archaeological Determinations of Eligibility, California Points of Historical Interest, and California Historical Landmarks. The results of the records search are presented in Section 4.

3.2 Native American Heritage Commission and Tribal Correspondence

On August 1, 2023, Dudek requested a NAHC search of their Sacred Lands File for the area of the Project site. The NAHC results, received August 12,2023, indicated the Sacred Lands File search failed to identify any cultural resources within the records search area (Appendix B). The NAHC then provided a list of Native American tribes culturally affiliated with the location of the Project site and recommended contacting them for further information. None of the Native American tribes were contacted by Dudek; follow-up communication and formal consultation with Native American tribes pursuant to Assembly Bill (AB) 52 will be the responsibility of the County.

The proposed Project is subject to compliance with Assembly Bill 52 (PRC Section 21074), which requires consideration of impacts to “tribal cultural resources” as part of the CEQA process and requires the CEQA lead agency to notify any groups (who have requested notification) of the Project who are traditionally or culturally affiliated with the geographic area of the Project. Because AB 52 is a government-to government process, all records of correspondence related to AB 52 notification and any subsequent consultation are on file with the County.

3.3 Archival Research

Dudek consulted historic maps and aerial photographs to understand development of the proposed Project site and surrounding properties. Topographic maps were available from 1907, 1914, 1929, 1941, 1942, 1943, 1948, 1955, 1964, 1969, 1975, 1981, 1986, 2012, 2015, 2018, and 2021 (NETR 2024a). The earliest topographic map depicts Patterson Pass Road and the north-south running road on the western edge of the substation in their present orientation, with two drainages running parallel to and just east of each of the roadways. No other development is evident within the Project area or its immediate surroundings. The 1943 topographic map is the first to depicted the residential structure located south of the Project site, as well as several other structures to the northeast along Patterson Pass Road, however, there are no evident changes or development within the Project API itself. The 1955 topographic map is the first to depict the Tesla Substation which intersects and is immediately north of the Project API. Transmission lines associated with the substation are depicted to the east of, but not intersecting the Project API. No further changes are evident on any of the subsequent topographic maps.

Aerial photographs were available for the project area from 1949, 1957, 1958, 19569, 1966, 1968, 1971, 1979, 1981, 1982, 1987, 1993, 2005, 2009, 2010, 2012, 2014, 2016, 2018, and 2020 (NETR 2024b). The aerial images are consistent with the topographic maps, with the 1949 image showing an undeveloped Project area with Patterson Pass Road, the paved road/driveway to the residential property to the south of the Project area, and a drainage paralleling and immediately east of Patterson Pass Road all visible. A small electrical substation is also visible along Patterson Pass Road to the north or the Project area. No changes are evident within the Project area or immediate vicinity until 1966 at which time the substation expands to the south and further expands west to its current footprint in the 2005 image. No other development is evident within the Project area on any of the aerial images.

3.4 Field Survey

On October 11, 2023, Dudek archaeologists Gregory Wada and Victoria Martin conducted an intensive pedestrian survey of the Project area using standard archaeological procedures and techniques that meet the Secretary of Interior's Standards and Guidelines for cultural resources inventory. Exposed ground surfaces were observed for surface artifacts, undisturbed areas, archaeological deposits, and historic structures; periodic boot scrapes were employed to expose additional ground surface. Evidence of artifacts and archaeological deposits were also opportunistically sought after in animal burrows and other areas with disturbed soil.

Dudek technical staff conducted a survey of the PG&E Tesla Substation on January 18, 2024. Access to the PG&E facility was limited to public access vantage points. The facility was documented through digital photographs.

4 Results of Identification and Evaluation Efforts

4.1 Records Search Results

NWIC and CCaIC records indicate that 38 previous cultural resources technical investigations have been conducted within 1 mile of the proposed Project site, of which 18 have addressed portions of the proposed Project site (Table 4-1).

4.1.1 Previously Conducted Studies

Table 4-1. Previous Cultural Resource Studies

Report ID	Year	Title	Author
Reports within the Project Site			
S-000848	1976	A Summary of Knowledge of the Central and Northern California Coastal Zone and Offshore Areas, Vol. III, Socioeconomic Conditions, Chapter 7: Historical & Archaeological Resources	Fredrickson, David A.
S-002458	1981	Overview of Prehistoric Archaeology for the Northwest Region, California Archaeological Sites Survey: Del Norte, Humboldt, Mendocino, Lake, Sonoma, Napa, Marin, Contra Costa, Alameda	Ramiller, Neil, Suzanne Ramiller, Roger Werner, and Suzanne Stewart
S-002865	1982	Archaeological field reconnaissance of the wind farm planned for the lands of Mulqueeney and Haera in the eastern most portion of Alameda County, California (letter report).	Holman , Miley P.
S-009462	1977	Identification and Recording of Prehistoric Petroglyphs in Marin and Related Bay Area Counties	Miller, Teresa Ann
S-011826	1980	Montezuma I and II Cultural Resources	Theodoratus, Dorothea J. , Mary Pyle Peters, Clinton M. Blount, Pamela J. McGuire, Richard D. Ambro, Michael Crist, Billy J. Peck, and Myrna Saxe
S-012790	1991	Sacramento-San Joaquin Delta, California: Historical Resources Overview	Owens, Kenneth N.
S-016660	1992	Prehistoric Rock Art of Alameda and Contra Costa Counties, California	Fentress, Jeffrey B.
S-017835	1975	Biological Distance of Prehistoric Central California Populations Derived from Non-Metric Traits of the Cranium	Suchey, Judy Myers

Table 4-1. Previous Cultural Resource Studies

Report ID	Year	Title	Author
S-018217	1996	Cultural Resource Evaluations for the Caltrans District 04 Phase 2 Seismic Retrofit Program, Status Report	Gmoser, Glenn
S-020395	1998	PCNs of the Coast Ranges of California: Religious Expression or the Result of Quarrying?	Gillette, Donna L.
S-024986	2000	Cultural Resources Assessment, PG&E Proposed Tri-Valley 2002 Electric Power Capacity Increase Project	
S-030204	2003	The Distribution and Antiquity of the California Pecked Curvilinear Nucleated (PCN) Rock Art Tradition.	Gillette, Donna L.
S-032596	2006	The Central California Ethnographic Community Distribution Model, Version 2.0, with Special Attention to the San Francisco Bay Area, Cultural Resources Inventory of Caltrans District 4 Rural Conventional Highways	Milliken, Randall, Jerome King, and Patricia Mikkelsen
S-033239	1994	Alameda Watershed, Natural and Cultural Resources: San Francisco Watershed Management Plan	Chavez, David
S-033545	1994	Draft Comprehensive Management and Use Plan and Environmental Impact Statement, Juan Bautista de Anza National Historic Trail, Arizona and California	–
S-033600	2007	Geoarchaeological Overview of the Nine Bay Area Counties in Caltrans District 4	Meyer, Jack and Jeff Rosenthal
S-048927	1997	The Economy and Archaeology of European-made Glass Beads and Manufactured Goods Used in First Contact Situations in Oregon, California and Washington	Crull, Donald Scott
S-052105	1978	Cultural Resources Survey of the Tesla-Lawrence Livermore Laboratory 230 KV Transmission Line, Pacific Gas and Electric Company	Wilson, Kenneth L.
Previous Studies Within a 1-Mile of the API			
S-002623	1981	Archaeological reconnaissance of the windpower generator farm to be located on the Jess Ranch East of Livermore, Alameda County (letter report).	Holman, Miley P.
S-004552	1976	Preliminary Report for the Pacific Gas and Electric Stanislaus Project on the Archaeological and Historical Resources Found Within Proposed Transmission Line Corridors	Horvath, Laurie, Anne M. Carlson, Suzanne Baker, and Cindy Desgrandchamp
S-005657	1982	An Archaeological Reconnaissance of Six Windfarm Parcels Near Altamont Pass, Alameda County, California	Slater, Sarah E. and Miley Paul Holman

Table 4-1. Previous Cultural Resource Studies

Report ID	Year	Title	Author
S-006510	1984	Archaeological Reconnaissance of a Portion of Section 29, Midway Quadrangle, Alameda County, California (letter report)	Holman, Miley P.
S-007071	1984	Helen Andrade Property Archaeological Reconnaissance (letter report)	Holman, Miley P.
S-007072	1984	A.I. and Agnes Martin Property Archaeological Reconnaissance (letter report)	Holman, Miley P.
S-009795	1986	Late Prehistoric Obsidian Exchange in Central California	Jackson, Thomas L.
S-017993	1995	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project	Hatoff, Brian, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente
S-027016	2003	A Cultural Resource Assessment for the Proposed Tesla Reclaimed Waterline Project, Alameda and San Joaquin Counties, California	Dougherty, John, Cindy Baker, and Mary L. Maniery
S-035796	2009	Cultural Resources Investigation and Architectural Evaluation of the Pittsburg-Tesla Transmission Line, Contra Costa and Alameda Counties, California	Siskin, Barbra, Cassidy DeBaker, and Jennifer Lang
S-043682	2004	Archaeological Inventory Survey: Tracy-Tesla Fiber Optics Project Utilizing COTP Transmission Towers, San Joaquin and Alameda Counties, California	Jensen, Sean M.
S-045214	2013	Cultural Resources Survey for FloDesign Wind Turbine, Inc. Proposed Sand Hill West Farm Repowering Project Alameda County, California	Farrell, Jenna L.
S-052299	2018	Historic Resource Survey and Assessment for the 1883 Midway Public School Relocation and Restoration Project, Alameda County, California	De Shazo, Stacey
SJ-02759	1995	Cultural Resources Inventory Report for the Proposed Mojave Northward Expansion Project, Final.	Hatoff, Brian, Barb Voss, Sharon Waechter, Stephen Wee, and Vance Bente
SJ-02930	1996	Archaeological Inventory Survey, Tracy to Fresno Longhaul Fiberoptics Data Transmission Line, Portions of Fresno, Madera, Merced, Stanislaus, and San Joaquin Counties, California	Jensen, Peter
SJ-04509	2001	GWF Tracy Peaker Project, Cultural Resources (Archaeological and Historic Built Environment Resources) Technical Report; Appendix C of Application for Certification.	Egherman, Rachael
SJ-05047	2003	A Cultural Resource Assessment for the Proposed Tesla Reclaimed Waterline Project,	Dougherty, J., C. Baker, and M. Maniery

Table 4-1. Previous Cultural Resource Studies

Report ID	Year	Title	Author
		Alameda and San Joaquin Counties, California.	
SJ-05528	2004	Archaeological Inventory Survey, Tracy-Tesla Fiber Optics Project Utililizing COTP Transmission Towers, San Joaquin and Alameda Counties, California.	Jensen, S. M.
SJ-07085	2008	Draft Environmental Assessment for the North Area Right-of Way Maintenance Program.	Geordt, A.
SJ-08014	2008	Cultural Resources Inventory for the California-Oregon Transmission Project, Right-of-Way Maintenance Environmental Assessment	CH2MHIII

4.1.2 Previously Identified Cultural Resources

Records search indicates that one built-environment resources is on file within the Project site, P-39-005337, Tesla-Salado-Manteca 115 kV Transmission Line and an additional 30 archaeological or built-environment resources are recorded within the 1-mile record search buffer. Five resources were on file within the 1-mile records search area (Table 4-2). One of these resources consists of a precontact indigenous site while the remaining resources are historic-era structures. The Tesla Substation (P-01-010502) DPR 523 form set was not submitted to the CHRIS and therefore, did not come back as part of the records search results.

Table 4-2. Previously Recorded Cultural Resources

Primary ID	Trinomial	Period	Name	Type	NRHP/CRHR Status
Resources Intersecting the API					
P-39-005337		Historic-era	Tesla-Salado-Manteca 115 kV Transmission Line	Engineering structure	6Z (Ineligible)
Resources Within a 1-Mile of the API					
P-01-000154	CA-ALA-000432H	Historic-era	#64 H	Foundations/structure pads; Landscaping/orchard; Privies/dumps/trash scatters; Walls/fences	7 (Not evaluated)
P-01-000155	CA-ALA-000433H	Historic-era	#63 H	Foundations/structure pads; Landscaping/orchard	7 (Not evaluated)

P-01-001783	CA-ALA-000623H	Historic-era	Southern Pacific Railroad	Roads/trails/railroad grades; Water conveyance system; Engineering structure; Bridge; Other	6Z (Ineligible)
P-01-010498	CA-ALA-000632H	Historic-era	Heara-Brockman Cemetery	Cemetery	7 (Not evaluated)
P-01-010499	–	Historic-era	500 kV Transmission Lines	Engineering structure	7 (Not evaluated)
P-01-010500	–	Historic-era	Heara-Brockman-Griffith Ranch	Farm/ranch	7 (Not evaluated)
P-01-010502	–	Historic-era	Tesla Substation Butler Building	Public utility building	6Z (Ineligible)
P-01-010503	CA-ALA-000603H	Historic-era	Telsa/Midway - Site A	Water conveyance system	7 (Not evaluated)
P-01-010504	–	Historic-era	Aermotor Windmill	Other; Walls/gates/fences	6Z (Ineligible)
P-01-010505	–	Historic-era	TI-01; Bottle Neck Fragment	Water conveyance system	7 (Not evaluated)
P-01-010506	–	Historic-era	TI-02; Wood/square Nail Isolate	Water conveyance system	7 (Not evaluated)
P-01-010507	–	Historic-era	TI-03; Manganese Glass Isolate	Water conveyance system	7 (Not evaluated)
P-01-010508	–	Historic-era	TI-04; Bottle Neck Isolate	Water conveyance system	7 (Not evaluated)
P-01-010614	–	Historic-era	TRWP - 24	Highway/trail	7 (Not evaluated)
P-01-010947	–	Historic-era	Pittsburg -Tesla Transmission Line	Engineering structure	3D (Appears eligible)
P-01-010948	CA-ALA-000657H	Historic-era	GANDA Site 19	Privies/dumps/trash scatters; Water conveyance system	7 (Not evaluated)
P-01-010949	CA-ALA-000660H	Historic-era	GANDA Site 20	Water conveyance system; Lake/river/reservoir	6Z (Ineligible)
P-01-010950	CA-ALA-000659H	Historic-era	GANDA Site 21	Foundations/structure pads; Privies/dumps/trash scatters; AH05; Walls/fences; Farm/ranch	7 (Not evaluated)
P-01-011394	–	Historic-era	SH-JF-01	Roads/trails/railroad grades	7 (Not evaluated)
P-01-011395	–	Historic-era	SH-JF-02	Engineering structure	7 (Not evaluated)

P-01-011477	–	Historic-era	Isolate I-SRI-2	Water conveyance system	7 (Not evaluated)
P-01-011479	CA-ALA-000662H	Historic-era	SRI-2	Engineering structure	6Z (Ineligible)
P-01-011480	CA-ALA-000663H	Historic-era	SCR-3	Engineering structure	7 (Not evaluated)
P-01-011481	CA-ALA-000658H	Historic-era	SRI-4	Water conveyance system	7 (Not evaluated)
P-01-011482	CA-ALA-000661H	Historic-era	SRI-7	Water conveyance system	7 (Not evaluated)
P-01-012147	–	Historic-era	1883 Midway Public School	Educational building	7 (Not evaluated)
P-39-000088	–	Historic-era	Lateral 5 West, Banta Carbona Irrigation District	Other	6Z (Ineligible)
P-39-000098	CA-SJO-000292H	Historic-era	Western Pacific Railroad/Union Pacific RR; Includes Sharpe Army Depot Field Annex Railroad Spur	Roads/trails/railroad grades; Engineering structure; Bridge; Other	6Z (Ineligible)
P-39-004290	–	Historic-era	TTP-3, Historic Telegraph line along Western Pacific Railroad	Engineering structure	6Z (Ineligible)
P-39-004332	CA-SJO-000279H	Historic-era	Gallagher Foundation	Foundations/structure pads; AH10; Trees/vegetation	7 (Not evaluated)

4.2 Field Survey Results

4.2.1 Archaeology

Surface visibility was low (less than 10-percent) throughout the Project site due to dense non-native grasses. The previously recorded transmission lines intersecting the project site were relocated and found to be in the same condition as described in the site record. No archaeological resources were observed within the Project site during the field survey.

4.2.1.1 Geomorphology

Potential for yet identified cultural resources in the vicinity was reviewed against geologic and topographic data for the area and information from other nearby projects. The "archaeological sensitivity," or potential to support the presence of a buried prehistoric archaeological deposits, is generally interpreted based on geologic landform and environmental parameters (i.e., distance to water and landform slope).

The Project site is situated within the Alameda Creek Watershed. An ephemeral stream system, the Patterson Run, intersects the northwest portion of the project site, running parallel to Patterson Road. This waterway and Patterson Road are visible on the earliest historic topographic maps and aerial images, as such it is unclear the extent to which the course of the drainage is natural or has been modified to accommodate the roadway.

The project site is flat to gently sloping. Soils within the project site consist of Linne Clay Loam and Rincon Clay Loam series (USDA 2024). These soils consist of moderately deep to deep, well drained souls that form in material weathered from fairly soft shale and sandstone (Linne series) or alluvium from sedimentary rocks (Rincon series).

The northwest portion of the Project site, in the vicinity of the waterway, would be low-to-moderately-well suited to support the formation of buried cultural deposits or surface manifestations. Given the lack of disturbance in the area and review of this information, the project site has low-to-moderate archaeological sensitivity.

4.2.2 Built Environment

One built environment resource was noted in the API. The Tesla Substation (P-01-010502) is also in the proposed Project API. AECOM previously recorded and evaluated the substation in 2011 as part of PG&E's proposed Kelso to Tesla 230kv Reconductoring Project. Dudek field checked the Tesla Substation and found no changes since 2011. AECOM found the Tesla Substation ineligible for listing in either the NRHP or CRHR. It is unknown whether the State Historic Preservation Officer concurred with the evaluation. Research for this Project revealed no new information that would require a re-evaluation of the property and Dudek concurs with the previous recommendation that the property does not meet the criteria for listing in the NRHP or CRHR. A copy of the Updated DPR 523 form set and the original 2011 AECOM form set is included in Appendix C.

5 Summary of Findings and Management Considerations

As a result of Dudek's research, field survey, and property significance evaluations, the following section presents a summary of eligibility for the subject properties in the vicinity of the API, and management recommendations. The current cultural resources inventory was completed to satisfy the requirements of CEQA.

5.1 Archeological Resources Findings

Dudek's cultural resources inventory of the Project API suggests that there is a low-to-moderate potential for inadvertent impacts to previously unidentified archaeological cultural resources or deposits. While neither the CHRIS records search nor the NAHC Sacred Lands File search identified any discrete archaeological or built environment resources within the API, review of the geomorphology indicates a low-to-moderate potential for the presence of intact subsurface soils that could support archaeological deposits.

A cultural resources survey was completed of all undeveloped areas within the 85-acre API. No cultural resources were identified during this survey. Visibility of the ground surface was highly restricted due to the presence of thick, low-laying grasses and other non-native vegetation. Soils in the northwest portion of the API, in the vicinity of the waterway, do have low-to-moderate potential to support the presence of buried cultural deposits. Although there are not a high number of known cultural resources within the surrounding 0.5 miles, the low visibility of the ground surface during pedestrian survey, geomorphic setting, and lack of previous disturbance indicate that the Project does have a low-to-moderate potential of encountering unanticipated cultural resources within undeveloped areas of the API.

Recommended cultural resources mitigation should include preparation of measures for unanticipated cultural resources and human remains. With this strategy implemented, no cultural resources would be impacted (No Historic Properties Affected) by the Project as currently designed.

5.2 Archaeological Resources Management Recommendations

Unanticipated Discovery of Archaeological Resources

In the event that archaeological resources (sites, features, or artifacts) are exposed during construction activities for the proposed Project, all construction work occurring within 100 feet of the find shall immediately stop until a qualified archaeologist, meeting the Secretary of the Interior's Professional Qualification Standards, can evaluate the significance of the find and determine whether or not additional study is warranted. Recommendations will be dependent upon the potential for the find to be considered significant under CEQA (14 CCR 15064.5(f); PRC Section 21082). If the discovery proves potentially significant under CEQA, coordination with the lead agency and other designated parties is likely to be required. Additional work such as preparation of an archaeological treatment plan, testing, or data recovery may be warranted and should be developed based on the conditions and nature of the find.

Unanticipated Discovery of Human Remains

In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are found, the County Coroner shall be immediately notified of the discovery. No further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains shall occur until the County Coroner has determined, within 2 working days of notification of the discovery, if the potential remains are human in origin. If the County Coroner determines that the remains are, or are believed to be, Native American, the County Coroner shall notify the NAHC in Sacramento within 24 hours. In accordance with California Public Resources Code, Section 5097.98, the NAHC must immediately notify those persons it believes to be the most likely descendant (MLD) from of the deceased Native American. The MLD shall provide recommendations on next steps within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the property owner, the disposition of the human remains and/or related burial goods.

5.3 Built Environment Findings

One resource in the API, the Tesla Substation (P--01-010502) was re-evaluated for listing in the NRHP, the CRHR, and the Alameda County Register and was found ineligible under all criteria. As such, it is not considered an historical resource under CEQA. The recommended Status Code for each resource is 6Z (found ineligible for the NRHP, CRHR, or local designation through survey evaluation).

5.4 Built Environment Management Recommendations

No further work for built environment cultural resources is necessary prior to the proposed Project implementation.

6 References

AECOM. 2011. *Final Cultural Resources Technical Report Kelso Substation to Tesla Substation 230 kV Reconductoring Project.* Prepared for Pacific Gas and Electric. Original on file with Pacific Gas and Electric Company, San Ramon,

Alameda County. 2024. “Ordinance 2012-5.” https://www.acgov.org/cda/planning/generalplans/documents/HPO_Signed.pdf. Accessed May 28, 2024.

APLIC (Avian Power Line Interaction Committee). 2006. *Suggested Practices for Avian Protection on Power Lines” The State of the Art in 2006*. Edison Electric Institute, APLIC, and the California Energy Commission, Washington, D.C. and Sacramento, California

NETR (Nationwide Environmental Title Research). 2024a. “Historical Topographical Maps of the Project Boundary, Alameda County, California, dating from 907, 1914, 1929, 1941, 1942, 1943, 1948, 1955, 1964, 1969, 1975, 1981, 1986, 2012, 2015, 2018, and 2021” Accessed July, 2024. https://www.historicaerials.com/viewer.

NETR. 2024b. “Historical Aerial Photographs of the Project Boundary, Alameda County, California, dating from 1949, 1957, 1958, 19569, 1966, 1968, 1971, 1979, 1981, 1982, 1987, 1993, 2005, 2009, 2010, 2012, 2014, 2016, 2018, and 2020” Accessed July 2024. https://www.historicaerials.com/viewer.

USDA (U.S. Department of Agriculture). 2024. Web Soil Survey. Survey Staff, Natural Resources Conservation Service, U.S. Department of Agriculture. Accessed July 2024. http://websoilsurvey.sc.egov.usda.gov/.

Appendix A (Confidential)

Records Search Maps and Information

Appendix B (Confidential)

NAHC Sacred Lands File Search

Appendix C
DPR Forms

State of California - The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary# P-01-010502 – UPDATE
HRI #
Trinomial

*__Resource Name or #__ (Assigned by recorder) Tesla Substation – UPDATE

***Recorded by:** Dudek ***Date:** January 18, 2024 ☐ Continuation ☒ Update

***NRHP Status Code** 6Z

***P3a. Description:**

This Update serves to supplement the 2011 recordation and evaluation of the Tesla Substation located at 17545 Patterson Pass Road in Tracy, California, prepared in by AECOM. Dudek field checked the Tesla Substation and found no changes since AECOM recorded the resource. A detailed description of the subject property is provided in the attached 2011 DPR form set.

P5b. Description of Photo: (View, date, accession #) Photo 1, Tesla Substation overview, camera facing east, January 18, 2024

***P6. Date Constructed/Age and Sources:**
☒ Historic ☐ Prehistoric ☐ Both
1948 / PG&E Architectural Plans/Contracts

***P8. Recorded by:** (Name, affiliation, address)
Dudek
4900 California Avenue
Tower B 2nd Floor
Bakersfield, CA 93309

***P9. Date Recorded:**
January 18, 2024

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.")
Dudek. 2023. *Memorandum to Lauren McLeod, Levy Alameda, LLC from Nicholas Hanten, Dudek Archaeologist Regarding the Potentia Viridi Battery Energy Storage System Facility Project, Alameda County, California*.

***Attachments:** ☒Other (List): *Cultural Resources Report for the Kelso to Tesla 230kv Reconductoring Project, Alameda, California.* Prepared for Pacific Gas & Electric Company. Prepared by AECOM, August 2011.

*** B10. Significance**

The Tesla Substation was evaluated using the National Register of Historic Places (NRHP) and the California Register of Historic Resources (CRHR) criteria in 2011 by AECOM as part of the Cultural Resources Report for PG&E's proposed Kelso to Tesla 230kv Reconductoring Project. AECOM found the Tesla Substation ineligible for listing in either the NRHP or CRHR. It is unknown whether the State Historic Preservation Officer concurred with the evaluation. Research revealed no new information that would require a re-evaluation of the property and Dudek concurs with the previous recommendation that the property does not meet the criteria for listing in the NRHP or CRHR. Dudek also evaluated the substation using the criteria of the Alameda County Register and determined that it does not meet any of the criteria, which are nearly identical criteria to that that of the NHRP and the CRHR.

***Date of Evaluation:** May 21, 2024

State of California – The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PRIMARY RECORD

Primary # P-01-010502
HRI # ____________
Trinomial ____________
NRHP Status Code 6Z

Other Listings ____________
Review Code ________ Reviewer ____________ Date ________

Page 1 **of** 4 ***Resource Name or #** (Assigned by recorder) Tesla Substation

P1. Other Identifier: Tesla Substation

***P2. Location:** ☐ **Not for Publication** ☒ **Unrestricted** ***a. County** Alameda

and (P2b and P2c or P2d. Attach a Location Map as necessary.)

***b. USGS 7.5' Quad** Midway **Date** 1953 (R 1980) **T** 2S; **R** 4E; __ ¼ **of Sec** 32; ______ **B.M.**

c. Address 17545 Patterson Pass Road City Tracy Zip 95391

d. UTM: (give more than one for large and/or linear resources) Zone ______; ______________mE/ ______________mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate)

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)

The Tesla Substation property (**Photograph 1**) contains three historic-era buildings, several components of buss/switch apparatus, and two modern-era buildings. The three buildings are all located at the northern perimeter of the substation site. Building No. 1 (**Photograph 2**) is a single-story, rectangular in plan prefabricated metal building that is supported by a concrete slab foundation and is topped with a side-gable roof clad in corrugated metal. Visible beneath the gables are louvered vents. Fenestration consists of steel-frame casement windows that are covered by metal security bars.

Building No. 2 (**Photograph 3**) is situated east of Building No. 1. This concrete-masonry-unit building is rectangular in plan and topped with a flat roof. Fenestration consists of steel-frame casement windows. A pair of modern utility lights is affixed to the building's north elevation. A modern roll-up door and a single-entry personnel door are located on the building's east facade. (See Continuation Sheet)

***P3b. Resource Attributes:** (List attributes and codes) HP9. Public Utility Building

***P4. Resources Present:** ☒ Building ☐ Structure ☐ Object ☐ Site ☐ District ☐ Element of District ☐ Other (Isolates, etc.)

P5b. Description of Photo: (View, date, accession #) Photograph 1, Tesla Substation overview, camera facing north, June 22, 2011

***P6. Date Constructed/Age and Sources:** ☒ Historic ☐ Prehistoric ☐ Both
1948 / PG&E Architectural Plans/Contracts

***P7. Owner and Address:**
Pacific Gas & Electric Company
77 Beale Street
San Francisco, CA

***P8. Recorded by:** (Name, affiliation, address)
Mark Bowen
AECOM
2020 L Street, Suite 400
Sacramento, CA 95811

***P9. Date Recorded:**
June 22, 2011

***P10. Survey Type:** (Describe) Intensive

***P11. Report Citation:** (Cite survey report and other sources, or enter "none.") *Cultural Resources Report for the Kelso to Tesla 230kv Reconductoring Project, Alameda, California.* Prepared for Pacific Gas & Electric Company. Prepared by AECOM, August 2011.

***Attachments:** NONE ☐ Location Map ☐ Sketch Map ☒ Continuation Sheet ☒ Building, Structure, and Object Record ☐ Archaeological Record ☐ District Record ☐ Linear Feature Record ☐ Milling Station Record ☐ Rock Art Record ☐ Artifact Record ☐ Photograph Record ☒ Other (list) DPR 523 form set for P-01-010502, 2001

BUILDING, STRUCTURE, AND OBJECT RECORD

***NRHP Status Code** 6Z
***Resource Name or #** (Assigned by recorder) Tesla Substation

B1. Historic Name: Tesla Substation
B2. Common Name: Tesla Substation
B3. Original Use: Substation B4. Present Use: Substation
***B5. Architectural Style:** Utilitarian
***B6. Construction History:** (Construction date, alteration, and date of alterations) ca. 1948 – Building No. 1; 1948 – Building No. 2; post-1953 – Building No. 3

***B7. Moved?** ☐ No ☐ Yes ☒ Unknown **Date:** post-1948 **Original Location:** Building No. 2 appears to have possibly been located on the west side of the main gate
***B8. Related Features:** Keslo-Tesla Transmission Line

B9. Architect: Unknown b. Builder: D. W. Nicholson Corporation
***B10. Significance: Theme** Public Utilities **Area** Alameda County
Period of Significance 1948 **Property Type** Substation **Applicable Criteria** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)

In 2001, Van Citters Historic Preservation LLC (Van Citters) previously recorded and evaluated Building No.1 as part of the Cultural Resource Survey for the Tesla Power Project, Alameda and San Joaquin Counties California" for Foster Wheeler Environmental, Tesla Power Project 01-AFC-21. Van Citters' evaluation only evaluated the building under NRHP Criterion A and NRHP C, and recommended that the building, identified as a Butler building, as not eligible. AECOM reassessed the building and the entire substation site for the purposes of this project.

Construction of the Tesla Substation began in 1947 and was completed in 1948. Originally planned for only 38 acres, the first three buildings constructed were a Temporary Construction Warehouse (Building No. 1), Shop Building (Building No. 2), and the Control Building (Building No. 3). To the north of these buildings were the associated bus, switch, and other electrical transmission structures (PG&E GM 92000:1948). In 1947, PG&E planned to spend $55 million dollars towards expanding its facilities and transmission lines into the San Joaquin Valley. The construction of Tesla Substation was part of the company's plans for expansion into the San Joaquin Valley that followed the conclusion of World War II (*Electrical West* 1947:74). (See Continuation Sheet)

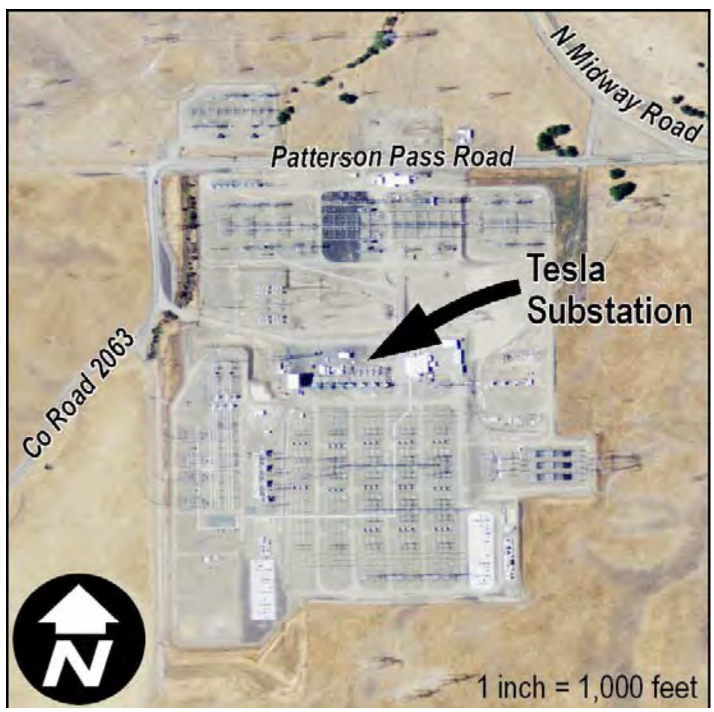
B11. Additional Resource Attributes: (List attributes and codes)

***B12. References:** *Electrical West*, Vol. 98, No. 2, 1947, available at the California History Room, California State Library; PG&E GM 92000, 1948 and Box 31900, available at the PG&E Records Center; PG&E GM 162818, 1948 Box 37564; USGS *Midway*, 7.5 minute series, 1953; Jester, Thomas C. Twentieth-*Century Building Materials*. Washington, D.C.: National Park Service. McGraw-Hill Companies, 1996.; PG&E Building and Land Inventory for Existing Structures; PG&E General Arrangement Outdoors: Tesla Substation Drawing 56626 Rev 53 May 2008.

B13. Remarks:

***B14. Evaluator:** Patricia Ambacher

***Date of Evaluation:** August 18, 2011



(This space reserved for official comments.)

Description (cont)

Building No. 3 (**Photograph 3**) is located to the east of Building No. 2. It is a concrete masonry building in a basic T-plan and is topped with a flat roof. A set of metal double doors are located on the west elevation and a single-entry metal door is located on the east elevation.

The remainder of the 75-acre property consists of switches, bus terminals, transformers, and wiring. Though access was limited by the perimeter cyclone security fence, at least two prominent modern buildings (1980s Butler-style building and circa 1970s control building) were observed in the center of the current complex. The substation is set within the rural eastern foothills of the Altamont Pass region. Fallow fields for cattle grazing and numerous wind generators surround the complex and numerous high voltage transmission lines radiate out from the complex in all directions. A county road passes along the northern and western boundary of the substation site and separates the main complex from a smaller and more modern area of switches, bus terminals, transformers, and wiring located at the northwest corner of the property.

Significance (cont)

As technology improved, electrical demands increased, and wind-generators increased in numbers in the area, PG&E continued to expand and construct updated and additional control rooms as well as bus/switch structures at the substation in the late-1950s, 1960s, 1980s, and 1990s (PG&E GM 162818 Box 37564; PG&E Building and Land Inventory; PG&E Drawing 56626 Rev 53).

The Tesla Substation does not appear to meet the criteria for listing in the NRHP or the CRHR. The Tesla Substation did not play a significant role in history and does not appear to meet NRHP/CRHR Criterion A/1. This substation was one of several facilities constructed by PG&E during a period when California, like much of the country, was experiencing a resurgence of population and economic growth following the conclusion of World War II. Like other public utility companies during this post-war period, PG&E responded by constructing more facilities to support its customers which were largely residential and agricultural in this region. Under NRHP/CRHR Criterion B/2, the substation is not known to be associated with any persons who played a significant role in the history of the area, state, or country.

Architecturally, the substation and its three buildings do not appear to have distinctive characteristics for their type, period, or method of construction; were not designed by a master architect or engineer and do not possess high artistic qualities. The overall substation complex was drafted in 1947 by in-house PG&E engineers using common design methods and readily available materials for the time. In terms of individual buildings, Building 1 is a “Steelox” prefabricated building produced by Armco Drainage and Metal Products for use as a temporary construction shed at the site. The Steelox design was conceptualized in 1934 for use on farms and for other storage needs. Expanded to be utilized in various applications during World War II, including hangars, warehouses, and residential, the Steelox design continues in a similar form to the present day. Buildings 2 and 3 are both utilitarian concrete masonry unit (CMU) construction that was typical for many post-World War II utility applications. The buildings appear to be comprised of “standard-plan” designs by PG&E to meet local needs and specifications determined by the equipment housed there. As CMU (or “concrete block” as it is sometimes called) structures, the buildings are typical construction for post-World War II buildings. Concrete block technology is a mixture of Portland cement and aggregates formed into standardized sizes for ease, speed, and stability of construction in various environments. Initially developed between 1900 and 1920, the CMU industry produced over 1.6 billion blocks in the United States by 1951. During this period, the industry consolidated into a few large manufactures that were connected with ready-mix concrete companies (Jester 1995: 80). Given their later construction, the buildings are not known to have been innovative or display unique characteristics of a special PG&E substation building type. Likewise, the electrical infrastructure associated with the buildings does not appear to be innovative or a notable design. Therefore, the substation does not appear to meet NRHP/CRHR Criterion C. Lastly, the property is not likely to yield information important to history as required under NRHP/CRHR Criterion D/4. In summary, the property does not appear to meet NRHP or CRHR criteria.

*Resource Name or # (Assigned by recorder) Tesla Substation
*Recorded by Mark Bowen, AECOM
*Date June 22, 2011 ☒ Continuation ☐ Update

Photographs (cont)

Photograph 2. Building No. 1, camera facing east

Photograph 3. Buildings No. 2 and 3, camera facing east

State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

PRIMARY RECORD

Primary # P-01-010502
HRI#
Trinomial
NRHP Status Code
Other Listings
Review Code Reviewer Date

*Resource Name or #: (Assigned by recorder) Tesla Substation Butler Building

P1. Other Identifier: N/A

***P2. Location:** [x] Not for Publication [ ] Unrestricted

*a. County: Alameda and (P2c, P2e, and P2b or P2d. Attach a Location Map as necessary)

*b. USGS 7.5' Quad: Midway (#4451) Date: 1980 T 2S; R 4E; SW ¼ of SW ¼ of NE ¼ of Sec. 32; Mt. Diablo B.M

c. Address: N/A City: Zip:

d. UTM (Give more than one for large and/or linear resources) Zone: 10; 626,604 mE/ 4,179,923 mN

e. Other Locational Data: (e.g., parcel #, directions to resource, elevation, etc., as appropriate) *See Continuation Sheet*

***P3a. Description:** (Describe resource and its major elements. Include design, materials, condition, alterations, size, setting, and boundaries)
The oldest structure at the substation is a Butler building with a gable metal roof and ribbed metal siding. The windows are fixed metal units and have been fitted with a metal grate. The attic vent is rectangular.

***P3b Resource Attributes:** (List relevant attributes and codes) HP9

***P4. Resources Present:** [ ]Building [x]Structure [ ]Object [ ]Site [ ]Element of District [ ]Other (Isolates etc.)

P5a. Photograph or Drawing (Photograph required for buildings, structures, and objects)

SEE ATTACHED

P5b. Description of Photo (View, date, accession #) See attached.

***P6. Date Constructed/Age and Sources:** [ ] Prehistoric [x] Historic [ ] Both
The date given by PG&E is 1960-1965; a structure in a similar location appears on the 1953 quad.

***P7. Owner and Address:** PG&E

***P8. Recorded by:** (Name, affiliation, and address) K. Van Citters & K. Bisson; Van Citters: Historic Preservation LLC; 410 Amherst Drive SE, Albuquerque, NM 87106

***P9. Date Recorded:** 11/6/01

Form Prepared by: J. Farrell

***P10. Survey Type: (Describe)** [ ] Intensive [x] Reconnaissance [ ] Other:

***P11. Report Citation:** (Cite survey report and other sources, or enter "none") See Continuation Sheet.

***Attachments:** [ ] NONE [x] Location Map [ ] Sketch Map [ ] Continuation Sheet [x] Building, Structure, and Object Record [ ] Archaeological Record [ ] District Record [ ] Linear Feature Record [ ] Milling Station Record [ ] Rock Art Record [ ] Artifact Record [x] Photograph Record [ ] Other (List)

AUG - 7 2002

P-01-010502

State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
BUILDING, STRUCTURE, AND OBJECT RECORD

Primary # ______
Trinomial ______
*NRHP Status Code ______

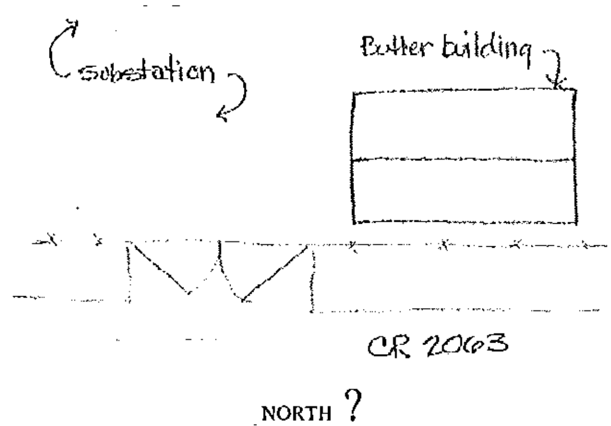
Page 2 of 6 *Resource Name or # (Assigned by recorder): Tesla Substation Butler Building

B1. Historic Name: Tesla Substation
B2. Common Name: Butler Building
B3. Original Use: Unknown B4. Present Use: Substation
*B5. **Architectural Style:** Utilitarian
*B6. **Construction History:** (Construction date, alterations, and date of alterations)
Grille added to windows – date unknown.
*B7. **Moved?** [ ] No [ ] Yes [X] Unknown **Date:** ______ **Original Location:** Unknown
*B8. **Related Features:** Transmission line towers.
B9a. Architect: N/A b. Builder: N/A
*B10. **Significance: Theme** ______ **Area:** ______
Period of Significance: N/A **Property Type:** Prefabricated building **Applicable Criteria:** N/A
(Discuss importance in terms of historical or architectural context as defined by theme, period, and geographic scope. Also address integrity.)
Exact date of structure is not known, but the structure is a standard Butler building and does not have characteristics that would qualify it for the NRHP under Criterion C. It is not associated with an event that would qualify it under Criterion A. As such, this property is recommended as not eligible.

B11. Additional Resource Attributes: (list attributes and codes) N/A
*B12. **References:** PG&E; 1953 Midway Quad Map
B13. Remarks: N/A
*B14. **Evaluator:** Karen Van Citters
***Date of Evaluation:** 11/6/01

(This space reserved for official comments)

Sketch Map with north arrow required.



State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
CONTINUATION SHEET

Primary #
HRI #
Trinomial

*Resource Name or # (Assigned by recorder) Tesla Substation Butler Building

Recorded by: K. Van Citters & K. Bisson   Date: 11/6/01

[X] Continuation [ ] Update

***P2.** e. From Tracy, CA, take I-205 west and exit at Mountain House Parkway (Patterson Pass Road). Turn left (south) and continue approximately 3.5 miles to the Midway Road intersection. From the intersection continue west on Patterson Pass Road approximately .3 miles. The building stands just south of the road within the PG&E substation fencing.

***P11.** Reeve, Stuart et. al. "Cultural Resource Survey for the Tesla Power Project, Alameda and San Joaquin Counties, California" Foster Wheeler Environmental 2002. Tesla Power Project 01-AFC-21 2001 and 2002.

P-01-010502

State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPHIC RECORD

Primary #
HRI #
Trinomial

Page 4 of 6 Project Name: Tesla/Midway Year 2001

Property or Project Name/Temporary No. Tesla Substation

Camera Format: 35mm Lens Size:

Film Type and Speed: 400 T-Max Year: 2001

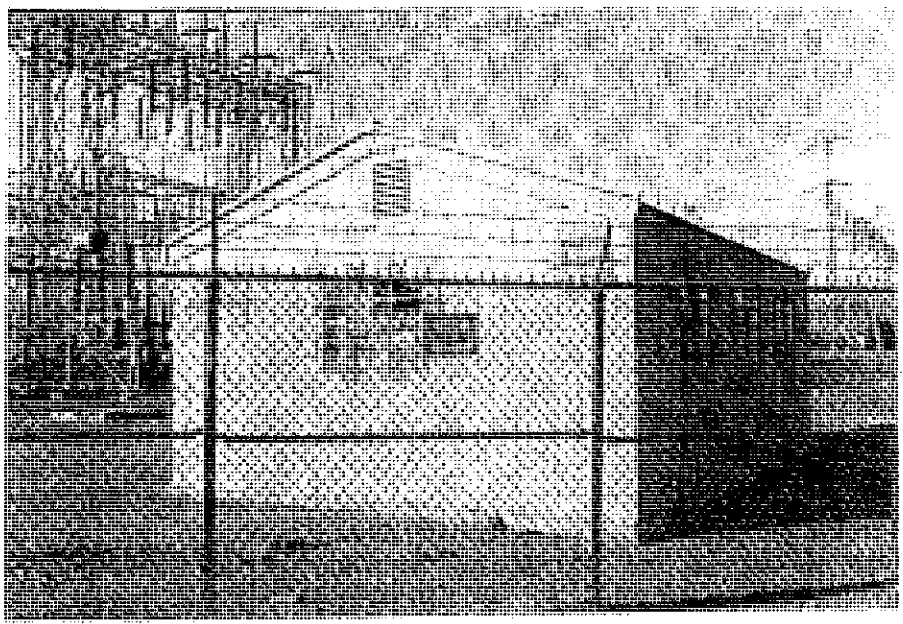
Negatives Kept at: Foster Wheeler

Month	Day	Time	Exp./Frame	Subject/Description	View Toward		Accession No.
11	6		Roll 2: 3	Photo I.D.			
11	6		4	Tesla/Midway Substation	SE		
11	6		5	Tesla/Midway Substation	SE		
11	6		6	Tesla/Midway Substation	West		

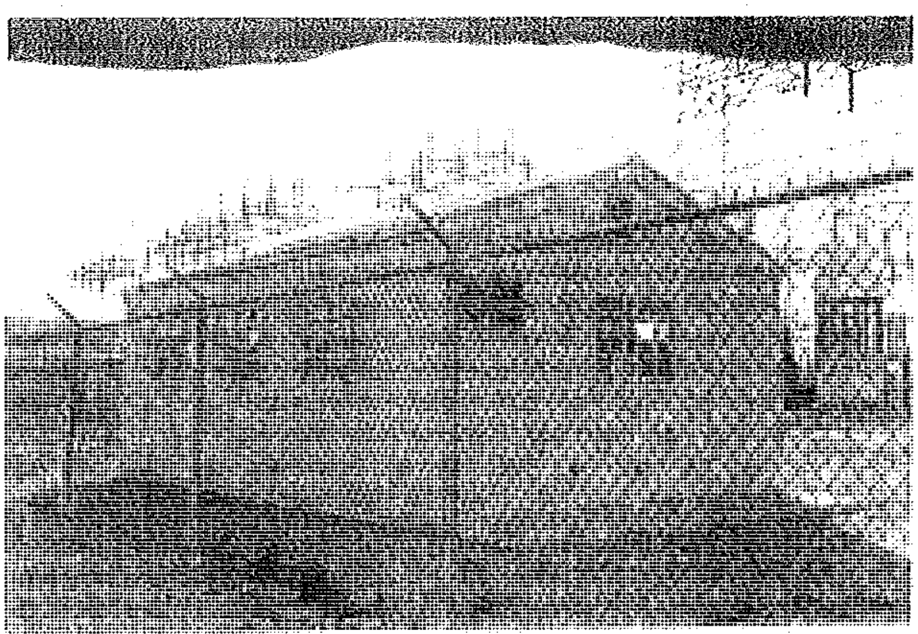
State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION
PHOTOGRAPHS

Primary #
HRI #
Trinomial

Resource Name or #: Tesla Substation



Tesla Substation looking west



Tesla Substation looking southeast

AUG - 7 200?

P-01-010502

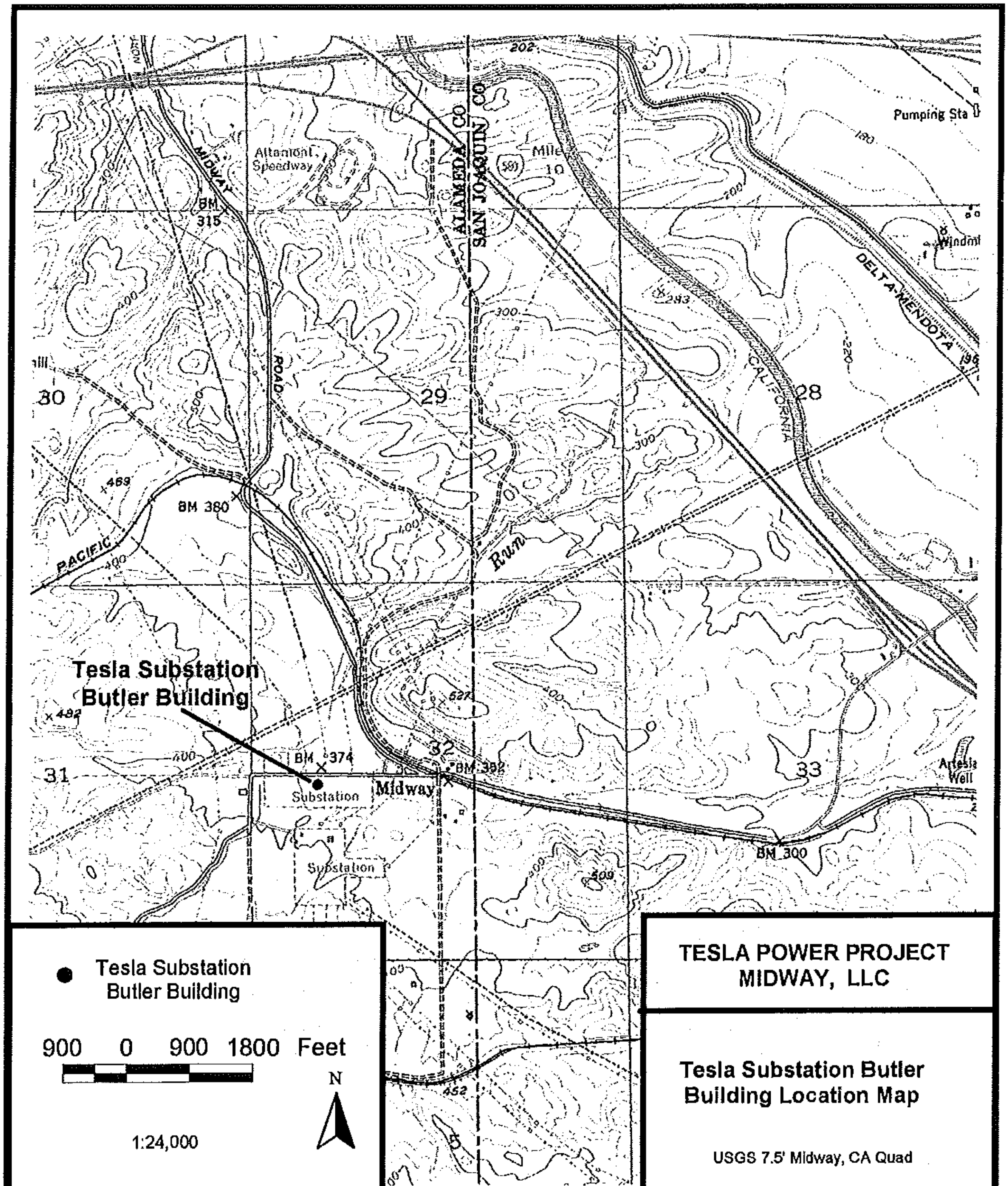
State of California -- The Resources Agency
DEPARTMENT OF PARKS AND RECREATION

LOCATION MAP

Primary #: ____________
HRI # ____________
Trinomial ____________

*Resource Name or #: (Assigned by recorder) Tesla Substation Butler Building

*Map Name: Midway *Scale: 1:24,000 *Date of Map: 1980



DPR 523J (1/95) *required information

AUG 7 2002