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CHAPTER 3 – PROJECT DESCRIPTION

This chapter defines the LS Power Grid California, LLC (LSPGC) Collinsville 500/230 Kilovolt (kV) Substation Project (Proposed Project) location, objectives, and components; the Proposed Project includes LSPGC's Collinsville Substation and 7.5-mile long transmission line as well as new transmission lines and modifications to existing lines and substations that must be made by Pacific Gas and Electric Company (PG&E) to interconnect Collinsville Substation to PG&E's electrical system (PG&E's Interconnection Facilities). This chapter provides an overview of the existing electric system; and explains how the Proposed Project would be implemented and its place within California's electrical transmission system. This chapter also identifies any permits or other approvals that may be needed to implement the Proposed Project. Lastly, this chapter identifies measures proposed by LSPGC and/or PG&E to avoid or minimize potential environmental impacts.

The applicant-proposed measures (APMs) and any mitigation measures imposed as part of this application proceeding would not apply to PG&E's scope of work. Although PG&E's Interconnection Facilities are part of the Proposed Project being evaluated under California Environmental Quality Act (CEQA), PG&E's construction is not part of this application and does not require authorization under this specific California Public Utilities Commission (CPUC) decision. However, PG&E's work to interconnect the LSPGC facilities into PG&E's electrical system would be subject to all applicable regulatory requirements. In addition, PG&E would implement Construction Measures (CMs) during construction of its Proposed Project components, and these CMs would be considered by the CPUC in its environmental review of the Proposed Project.

3.1 PROJECT OVERVIEW

3.1.1 Summary of Proposed Project

As detailed in Chapter 2 – Introduction, the Proposed Project addresses multiple overloads on the 230 kV corridor between PG&E's existing Contra Costa and Newark substations. The Proposed Project would also provide additional supply from the 500 kV Vaca-Dixon Transmission System into the northern Greater Bay Area (Bay Area) to increase reliability in the area, as well as advance additional renewable energy generation in the Bay Area.

The California Independent System Operators (CAISO) 2021-2022 Transmission Plan identified the Proposed Project as a needed upgrade to the California electric grid.[1] The 2021-2022 Transmission Plan was based on the requirement to add approximately 1,000 megawatts of new resources per year in the state over the 10-year planning period. CAISO's Policy-Driven Need Assessment identified the Proposed Project as necessary to ensure deliverability of resources to meet policy goals and resource adequacy needs of the state. The Policy-Driven Need Assessment is an iterative process, encompassing three studies: a reliability assessment, an on-peak deliverability assessment, and an off-peak deliverability assessment. The key objectives of the Policy-Driven Need Assessment are to assess the transmission impacts of portfolio resources,

[1] The Pittsburg 115 kV Bus Reactor identified in CAISO's 2022-2023 Transmission Plan is not part of the Proposed Project. The 115 kV Bus Reactor would be permitted and built separately by PG&E.

identify necessary upgrades to ensure reliability and minimize excessive curtailment, and inform future portfolio development. The Proposed Project would address transmission constraints in the base portfolio (i.e., Cayetano-North Dublin 230 kV Transmission Line, Lone Tree-USWP-JRW-Cayetano 230 kV Transmission Line, and Las Positas-Newark 230 kV Transmission Line) identified by the assessment.

The main components of the Proposed Project include the following:

- Constructing a new 500/230 kV substation, herein referred to as the proposed LSPGC Collinsville Substation.
- Constructing two new approximately 1.25-mile-long, single-circuit 500 kV transmission line segments extending to interconnect (or "loop") PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line into the proposed LSPGC Collinsville Substation.
- Constructing a new approximately 6-mile-long, double-circuit 230 kV transmission line to connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation.
- Extending and connecting PG&E's existing 12 kV Peabody 2107 Circuit distribution line to the proposed LSPGC Collinsville Substation.

Constructing two new telecommunications paths to the proposed LSPGC Collinsville Substation—a new microwave tower would be constructed and owned by PG&E at the substation and a new fiber optic path would be installed between existing fiber in the City of Pittsburg and the proposed substation.

In April 2024, 2023-2024 Transmission Plan was approved by CAISO, and it identified the Collinsville 230 kV Reactor Project as a needed near-term policy driven upgrade to the proposed Collinsville-Pittsburg 230 kV transmission lines. The Collinsville 230 kV Reactor Project includes two 20-ohm series reactors per phase, to be located within the proposed LSPGC Collinsville Substation fence line, and would be constructed concurrently with the Collinsville 500/230 kV Substation Project. As such, LSPGC included the components associated with the Collinsville 230 kV Reactor Project as part of the Collinsville Substation 500/230 kV Substation Project's PEA. However, because the Collinsville 230 kV Reactor Project is considered a separate project by CAISO (approved in different Transmission Plans) it would be processed through a separate GO 131-D application and proceeding with the CPUC but would be included in the CPUC's CEQA analysis for the larger Collinsville 500/23 kV Substation Project.

3.1.2 Geographical Location of the Proposed Project

The Proposed Project would cross Solano, Sacramento, and Contra Costa counties in California. As depicted in Figure 3-1: Project Overview Map, the proposed LSPGC Collinsville Substation would be located near the unincorporated community of Collinsville, which is in southeastern Solano County. The Proposed Project would include two single-circuit 500 kV transmission lines that would be extended to interconnect PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line to the proposed LSPGC Collinsville Substation. A new double-circuit 230 kV transmission line (the proposed LSPGC 230 kV Transmission Line) would travel from the proposed LSPGC

Figure 3-1: Project Overview Map

Collinsville Substation, travel under the Sacramento-San Joaquin River Delta (Delta) waterways, and continue in an underground configuration before connecting to PG&E's existing Pittsburg Substation in the City of Pittsburg in northern Contra Costa County.

The current land uses around the proposed LSPGC Collinsville Substation site include undeveloped areas (e.g., Suisun Marsh and the Delta), utility operations, residences, wind farms, and agricultural lands. The proposed substation site is also within the Collinsville-Montezuma Hills Wind Resource Area in Solano County, which is an area used primarily for energy facilities and farming (Sacramento Municipal Utility District [SMUD] 2023). The proposed LSPGC Collinsville Substation site is on property owned by Flannery Associates, LLC, which recently purchased thousands of acres of land in Solano County (including many former SMUD properties in the Collinsville area). New rights-of-way (ROWs) would be required for all transmission lines, and land rights would be acquired by LSPGC for the proposed Collinsville Substation. PG&E's existing Pittsburg Substation is surrounded by industrial land uses bordered by recreational areas, low- and medium-density residential areas, and commercial land uses. More details on the land uses in the Proposed Project area are provided in Section 5.11 Land Use and Planning.

3.2 EXISTING AND PROPOSED SYSTEM

3.2.1 Existing System

3.2.1.1 Existing Utility System

The Proposed Project is located within an existing regional transmission system that provides electricity to the greater Bay Area. The existing utility system in the Proposed Project vicinity includes, but is not limited to, the following PG&E substations and transmission infrastructure:

- Vaca Dixon Substation (500/230 kV),
- Pittsburg Substation (230/115 kV),
- Tesla Substation (500/230 kV), and
- Vaca Dixon-Tesla 500 kV Transmission Line.

The current system delivers electricity to population centers within the greater Bay Area. A schematic diagram of the existing utility system is provided in Figure 3-2: Existing System Line Diagram.

3.2.2 Proposed Project System

The Proposed Project would address transmission limitations identified by CAISO in the base portfolio components—the Cayetano-North Dublin 230 kV Transmission Line, Lone Tree-USWP-JRW-Cayetano 230 kV Transmission Line, and Las Positas-Newark 230 kV Transmission Line—by providing an additional supply path to the greater Bay Area. As part of the Proposed Project, two new single-circuit 500 kV transmission lines would be extended to interconnect PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line to the proposed LSPGC Collinsville 500/230kV Substation. Additionally, the proposed double-circuit 230 kV transmission line would connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation. These facilities would create a loop for reliability. These Proposed Project components are described in more detail under the subheadings that follow. Figure 3-3: Proposed System Line

Diagram shows how the facilities would be configured after implementation of the Proposed Project. Attachment 3-A: Detailed Route Map contains maps of the existing facilities that would be modified by the Proposed Project; geographic information system data is provided under separate electronic cover. The same users of the system energy would be served by the system following the implementation of the Proposed Project.

3.2.2.1 Proposed Project System by Component

3.2.2.1.1 LSPGC Collinsville Substation

The initial buildout of the proposed LSPGC Collinsville Substation would be a breaker-and-a-half (BAAH) configuration with two 500/230 kV transformer banks, two 230 kV bays with six circuit breakers, and two 500 kV bays with six circuit breakers. The ultimate configuration, per the CAISO specifications for future buildout, includes adding two 500 kV bays with six circuit breakers and three 230 kV bays with nine circuit breakers. The substation footprint depicted in Figure 3-4: Proposed Substation General Arrangement does not depict the expansion area for the ultimate buildout. Each 500/230 kV transformer bank would consist of three single phase 500 megavolt-ampere (MVA) transformers, providing 1,500 MVA. A 3,000 ampere (A), 16.1-ohm series capacitor would be installed at the proposed LSPGC Collinsville Substation, on PG&E's existing Vaca Dixon-Telsa 500 kV Transmission Line, as depicted in Figure 3-4: Proposed Substation General Arrangement to provide series compensation.

3.2.2.1.2 PG&E 500 kV Interconnection

Two approximately 1.2~~5~~-mile-long single-circuit 500 kV overhead transmission line extensions (also referred to as the proposed PG&E 500 kV Interconnection) would be constructed to interconnect PG&E's existing Vaca-Dixon Tesla 500 kV Transmission Line to the proposed LSPGC Collinsville Substation. The interconnection would be supported by approximately 1~~3~~1 new lattice steel towers (LSTs), and (3) three 3-pole Tubular Steel Poles (TSPs), and would require the removal of approximately ~~one~~two existing LST. With the addition of the new Collinsville substation, two (2) new transpositions will be added, one (1) existing transposition location will be replaced with a 3-pole TSP along the new Vaca – Collinsville 500kV, and (1) one new transposition will be added along the new Collinsville - Tesla 500kV to fix the disruption of existing phasing transpositions.

3.2.2.1.3 LSPGC 230 kV Transmission Line

The LSPGC 230 kV Transmission Line would connect the proposed LSPGC Collinsville Substation to PG&E's existing Pittsburg Substation. This Proposed Project component can be divided into three distinct segments—overhead, submarine, and underground—as described in the subsections that follow. These segments are depicted on Figure 3-1: Project Overview Map and shown in more detail in Attachment 3-A: Detailed Route Map.

Overhead Segment

The overhead segment of the proposed LSPGC 230 kV Transmission Line (also referred to as the proposed LSGPC 230 kV Overhead Segment) would consist of an approximately 1-mile-long double-circuit line connecting the proposed LSPGC Collinsville Substation to the submarine segment. This segment would be supported by approximately four pier-mounted tubular steel poles (TSPs), approximately two directly embedded TSPs, and one guyed six-pole dead-end structure. The overhead segment would end at a single in-river transition structure located along

the north side of the Sacramento River. At the transition structure, the line would transition the overhead conductors to submarine cables.

Figure 3-2: Existing System Line Diagram

Figure 3-3: Proposed System Line Diagram

Figure 3-4: Proposed Substation General Arrangement

Submarine Segment

The submarine segment (also referred to as the proposed LSPGC 230 kV Submarine Segment) would begin at the in-river transition structure where up to six approximately 4.5-mile-long submarine cables would be installed between 6 and 15 feet below the river's sediment surface in a generally southwesterly direction toward the City of Pittsburg. The submarine cables would terminate at an onshore underground utility vault, completing the submarine segment.

Underground Segment

The underground segment (also referred to as the proposed LSPGC 230 kV Underground Segment) would begin at the onshore underground utility vault where the submarine cables would transition to underground transmission cables. From that point, one approximately 1,070-foot duct bank and a second approximately 2,000-foot duct bank would be constructed between the transition vault and the fence line of PG&E's existing Pittsburg Substation. The cables would connect to two new riser structures prior to entering and terminating at PG&E's existing Pittsburg Substation.

3.2.2.1.4 PG&E Substation Modifications

PG&E's existing Pittsburg Substation would be modified by shifting line positions (relocating two (2) existing line positions with new equipment to accommodate the two (2) 230kV Collinsville lines), bus work, and modifying electrical equipment to facilitate the connection of the proposed LSPGC 230 kV Transmission Line. In addition, PG&E's existing Vaca Dixon and Tesla substations would receive modifications to their bus structures and electrical equipment to accommodate the proposed PG&E 500 kV Interconnection. All modifications would be confined within the existing substation fence lines.

3.2.2.2 System Capacities

The proposed LSPGC Collinsville Substation would be rated at 4,000 A. The proposed LSPGC 230 kV Transmission Line would be rated at 2,100 A during normal conditions and 3,500 A under long-term emergency conditions. The PG&E 500 kV Interconnection's expected minimum line capacity would be 2,100 A under normal conditions and 3,500 A under longer-term (i.e., 4-hour) emergency conditions. The Proposed Project would address constraints impacting the deliverability of the renewable and energy storage portfolio resources during on-peak conditions. It also resolves other constraints in the Greater Bay Area. In the transmission capability assessment, which is an input to the CPUC Integrated Resource Planning (IRP) process, CAISO has estimated a substantial increase in transmission capability resulting from the Proposed Project's inclusion. This enhancement effectively eliminates multiple constraints within the Greater Bay Area. While the Proposed Project is expected to increase the transmission capability of the surrounding system, it is not expected to increase the capacity of the existing facilities.

3.2.3 System Reliability

The Proposed Project was identified by CAISO in its 2021-2022 Transmission Plan as a policy upgrade to address transmission constraints identified in the policy on-peak deliverability assessment in the greater Bay Area, as well as to allow advancement of renewable energy generation. In its 2021-2022 planning cycle, CAISO evaluated upgrades needed to successfully meet California's policy goals, in addition to examining conventional grid reliability

requirements and projects that could bring economic benefits to consumers. CAISO's analysis, conducted through an open and stakeholder-inclusive planning process, led to the identification of the need for the Proposed Project as part of a comprehensive solution (relying in part on other upgrades already identified to meet reliability needs notwithstanding state policy objectives) to mitigate thermal overloading of the Cayetano-North Dublin 230 kV Transmission Line under N-2 conditions, Lone Tree-USWP-JRW-Cayetano 230 kV Transmission Line under normal (N-0) conditions, and Las Positas-Newark 230 kV Transmission Line under N-2 conditions, which are limiting the deliverability of renewable and energy storage portfolio resources (CAISO 2022). As a result, the need for a new 500/230 kV substation and double-circuit 230 kV transmission line was identified specifically to address multiple overloads on the 230 kV corridor between Contra Costa and Newark substations under N-0, N-1, and N-2 contingency conditions,[2] and to provide additional supply from the 500 kV system into the greater Bay Area to increase reliability to the area and advance additional renewable generation in the northern area.

3.2.4 Planning Area

The Proposed Project would support the existing regional transmission system that provides electricity to the greater Bay Area. Therefore, the system planning area served by the Proposed Project is identified as the "greater Bay Area." The term "regional transmission system" is used to describe the network that provides electricity to this planning area. The larger, regional system that provides electricity to all PG&E's customers is identified as the "bulk PG&E transmission system."

3.3 PROJECT COMPONENTS

3.3.1 Preliminary Design and Engineering

The main Proposed Project component includes the proposed LSPGC Collinsville Substation and the proposed LSPGC 230 kV Transmission Line. The Proposed Project would require the extension of one existing PG&E 500 kV transmission line (resulting in two extensions) to interconnect with the proposed LSPGC Collinsville Substation, as well as the proposed modification of PG&E's existing Pittsburg Substation. Attachment 3A: Detailed Route Map identifies the locations of the major Proposed Project components, as well as work areas and access roads. The individual components of the Proposed Project are discussed in Section 3.3.4 Proposed Facilities.

LSPGC has completed approximately 30 percent of the engineering design, and PG&E has completed approximately 6~~3~~0 percent of the transmission line ~~engineering~~ design on the Proposed Project. PG&E substation design is progressing to complete 30% by end of Q2 2025. As such, the information in this document is based on preliminary engineering designs and is subject to change based on additional and/or final engineering designs; further studies to be performed by PG&E; regulatory requirements; conditions on the ground; and/or ongoing coordination discussions among LSPGC, PG&E, the CPUC, and CAISO.

[2] Normal or N-0 conditions refer to when the electric system is functioning normally and is not experiencing outages. N-1 contingency refers to the first contingency, or an outage occurring to a single component (e.g., a transformer or transmission circuit) of the electric system. N-2 contingency refers to when an outage occurs to two components of the electric system (CAISO 2021).

3.3.2 Segments, Components, and Phases

All components of the Proposed Project would be installed during a single phase of construction. Each Proposed Project component's area or length is presented in Table 3-1: Proposed Project Component Summary. The Proposed Project's components are described in the subsections that follow and are depicted in Figure 3-1: Project Overview Map.

Table 3-1: Proposed Project Component Summary

Proposed Project Component	Approximate Size/Length
LSPGC Collinsville Substation	11 acres
PG&E 500 kV Interconnection	2.5~~8~~ miles
LSPGC 230 kV Transmission Line	5.6 miles
PG&E 12 kV Distribution Line	0.9 mile
LSPGC Telecommunications Line	1.2 miles

Note: PG&E's existing substations would be modified within their existing property lines.

3.3.3 Existing Facilities

3.3.3.1 LSPGC Facilities

LSPGC does not have any existing facilities in the Proposed Project area.

3.3.3.2 PG&E Facilities

PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line would be modified and extended as part of the p~~P~~roposed p~~P~~roject. The transmission line modifications would involve removing approximately one existing structure and approximately 200 feet of existing conductor to accommodate the interconnection, as described in more detail in Section 3.3.4.2 Proposed PG&E Facilities. PG&E's existing transmission line is supported by galvanized steel LSTs with a dull gray finish. Details regarding the existing ROW, as well as structures that would be removed or modified, are provided in Table 3-2: Existing Station Specifications. PG&E's existing transmission line contains three sets of double-bundled 2300 all-aluminum conductors. The line also supports Existing~~a~~ ~~7#8~~3#6 Alumoweld overhead ground wire.

Table 3-2: Existing Station Specifications

Station Name	Approximate Size (acres)	Approximate Length (feet)	Approximate Width (feet)
Pittsburg Substation	28.7	1,820	1,050
Vaca Dixon Substation	66.8	4,000	1,925
Tesla Substation	75.9	2,060	2,040

PG&E's existing Pittsburg, Vaca Dixon, and Tesla substations are located in the Proposed Project vicinity and would be modified as part of the Proposed Project. The modifications at PG&E's existing Pittsburg Substation would include the addition of two new 230 kV dead-end

structures constructed on the west side of the substation to interconnect the proposed LSPGC 230 kV Transmission Line. PG&E would be responsible for the physical substation modifications.

PG&E's existing Pittsburg Substation structures are grey in color. The substation has existing lighting, which includes typical security lighting, that conforms to the National Electric Safety Code (NESC) requirements and other applicable outdoor lighting codes. The location of this facility is depicted in Attachment 3-A: Detailed Route Map.

The proposed modifications to PG&E's existing Vaca Dixon Substation would include potential modifications to the telecommunication equipment (e.g., microwave modifications, fiber modifications), electrical equipment, line protection relays, Fixed Series Capacitor (FSC), and bus structures.

The proposed modifications to PG&E's existing Tesla Substation would include potential modifications to the telecommunication equipment (e.g., microwave modifications, fiber modifications), electrical equipment, line protection relays, and bus structures.

Section 3.2.1 Existing System provides additional details on the Proposed Project and its function within PG&E's existing regional transmission system.

3.3.4 Proposed Facilities

3.3.4.1 LSPGC Facilities

3.3.4.1.1 Proposed LSPGC Collinsville Substation

The proposed LSPGC Collinsville Substation would contain 500 kV gas-insulated switchgear (GIS), 230 kV GIS, and associated facilities, occupying approximately 11 acres. Additional activities on the site, including the use of a staging area, would require grading and temporary disturbance of an additional approximately 21 acres. The proposed LSPGC Collinsville Substation[3] would include the following:

- Lightning shielding masts;
- 500 kV GIS with six 500 kV sulfur hexafluoride (SF_6 gas-insulated circuit breakers and associated disconnect switches, current transformers, and voltage transformers;
- One 500 kV series capacitors;
- 500 kV surge arresters;
- 500 kV SF_6 gas-insulated bus;

[3] LSPGC would acquire the SF_6 insulated equipment prior to the phase-out dates listed in Tables 1 and 2 in Title 17, Section 95352 of the California Code of Regulations (CCR). The earliest phase-out date that would apply to the proposed LSPGC Collinsville Substation would be January 1, 2027. As noted in Table 3-12: Proposed Construction Schedule, construction of the Proposed Project would commence in May 2026, before the earliest potentially applicable phase-out date.

- 230 kV GIS with six 230 kV SF_6 gas-insulated circuit breakers and associated disconnect switches, current transformers, and voltage transformers;
- 230 kV surge arresters;
- 230 kV group-operated disconnect switches;
- 230kV potential transformers;
- 230 kV station service transformers;
- 230 kV SF_6 gas-insulated bus;
- Two 230 kV 20-ohm series reactors;[4]
- Seven single-phase step-down mineral oil-immersed type autotransformers:
  - Nominal (L-L) voltage: 535 kV to 235 kV,
  - Operating (L-L) voltage: 535 kV to 235 kV, and
  - 300/375/500 MVA (per phase);
- PG&E-owned microwave tower for the 500 kV telecommunications paths;
- PG&E Communications enclosure;
- Optical ground wire (OPGW) fiber cables for the 230 kV telecommunications path;
- A Supervisory Control and Data Acquisition (SCADA) system consisting of fully redundant servers, power supplies, and Ethernet Local Area Network (LAN) and Wide Area Network (WAN) connections, routers, firewalls, and switches;
- Two control enclosures (located in the GIS enclosure);
- Two dead-ends for the 500 kV transmission lines;
- Two dead-ends for the 230 kV transmission line; and
- Heating, ventilation, and air conditioning (HVAC) equipment.

The substation would also include the five enclosures summarized in Table 3-3: Collinsville Substation Enclosure Summary. Personnel would be able to enter the GIS and control enclosures for construction and maintenance purposes.

[4] The Collinsville 230 kV Reactor Project is considered a separate project by CAISO (approved in different Transmission Plans) it would be processed through a separate GO 131-D application and proceeding with the CPUC but would be included in the CPUC's CEQA analysis for the larger Collinsville 500/230 kV Substation Project.

Table 3-3: Collinsville Substation Enclosure Summary

Enclosure	Dimensions	Construction Method	Location
500 kV GIS Enclosure	120 feet long by 40 feet wide by 37 feet high	Constructed on site	North of the transformers in the substation yard
500 kV Control Enclosure	30 feet long by 40 feet wide by 10 feet high	Constructed on site	Adjacent to the 500 kV GIS Enclosure
230 kV GIS Enclosure	105 feet long by 32 feet wide by 37 feet high	Constructed on site	South of the transformers in the substation yard
230 kV Control Enclosure	30 feet long by 32 feet wide by 10 feet high	Constructed on site	Adjacent to the 230 kV GIS Enclosure
PG&E Communication Enclosure	10 feet long by 7 feet wide by 8 feet high	Prefabricated	Adjacent to the east substation fence near the entrance gate

All major terminal equipment (e.g., power transformers, series capacitors, and GIS enclosures) would be installed on concrete foundations. Each transformer would have an oil-containment system consisting of an impervious, lined, and open or stone-filled sump area around the transformer. The maximum amount of oil required for the transformers would be approximately 28,000 gallons for each of the seven single-phase transformers. Transformer oil containment basins would be designed to contain the oil volume of the transformers, plus a 25-year, 24-hour storm event. The oil-containment basins would include a sump pump system with the ability to remove water, separate from any potentially spilled oil, allowing it to be drained similar to other water on the substation site. The oil-containment basins would be approximately 55 feet long, 35 feet wide, and 6 feet deep with a sump pit measuring approximately 2 feet long, 2 feet wide, and 6 feet deep. The proposed Collinsville Substation would also be equipped with lead-acid batteries to provide backup power for monitoring, alarm, protective relaying, instrumentation and control, and emergency lighting during power outages. Secondary containment would be constructed around and under the battery racks, and the Hazardous Materials Management Plan (HMMP) prepared for operations the substation would address containment from a battery leak.

The tallest structure within the proposed LSPGC Collinsville Substation would be the approximately 199-foot-tall microwave communication tower owned by PG&E. As noted in Section 3.3.5 Other Potentially Required Facilities, all structures have been submitted to the Federal Aviation Administration's (FAA's) screening tool to determine if formal notification would be required to evaluate potential obstructions to navigable airspace. No structures would require further notification. The general layout and arrangement of the substation are shown in Figure 3-4: Proposed Substation General Arrangement. Figure 3-5: Proposed Substation Profile Drawings provides vertical depictions of the substation and the approximate height of various equipment.

The substation would be surrounded by a prefabricated interlocking security wall that would be 10 feet tall with 1 foot of barbed wire on top. The access gate would open approximately 24 feet wide.

Figure 3-5: Proposed Substation Profile Drawings

All substation control enclosures would be painted a non-reflective, American National Standards Institute 70 light grey or similar neutral tone. All other substation components, including the substation security fencing, would have a non-reflective finish to the extent that such components are commercially available. Lighting would be installed and would conform to the NESC requirements and other applicable outdoor lighting codes. The facility would not require 24-hour illumination. Motion detection photocell lighting would be used to provide safety lighting at a level sufficient for safe entry and exit of the substation and control equipment enclosure. Additional manually controlled lights would be provided to ensure a safe working environment. Lighting would be shielded and pointed downward to minimize glare onto surrounding habitat.

The proposed LSPGC Collinsville Substation would be primarily powered by station service transformers located within the facility that would step-down the voltage from the low-voltage (230 kV) side of the station power transformers. An overhead (12 kV) electric distribution line would be installed from an existing PG&E distribution line to provide backup power for the substation. The proposed Collinsville Substation would also be equipped with lead-acid batteries to provide backup power for monitoring, alarm, protective relaying, instrumentation and control, and emergency lighting during power outages. A manual disconnect switch allowing for a mobile generator to be connected would be installed for the control enclosures. This mobile generator backup would only be used in a catastrophic emergency where both transmission and distribution power fail. The mobile generator would not be stored on site and would be rented or obtained, as needed, during emergency scenarios. The on-site auxiliary equipment (e.g., control room heating, ventilation, and air conditioning units [HVAC]; communications equipment; and lighting) would be the primary draw of operational electricity. It is assumed that the on-site demand for the site would be 44 kilowatts (kW), resulting in an annual demand of approximately 385,4000 kilowatt-hours.[5]

The proposed distribution line would be installed from Collinsville Road and would extend east and parallel to Stratton Lane until reaching the substation. The distribution line would be installed on approximately 21 new wood poles, as shown in Attachment 3-A: Detailed Route Map. Disturbance area characteristics for the Proposed Project are discussed in Section 3.5 Construction. All facilities, including the associated driveway, would be placed within the boundaries of the approximately 32-acre area land rights that would be acquired by LSPGC.

3.3.4.1.2 LSPGC 230 kV Transmission Line

The proposed double-circuit LSPGC 230 kV Transmission Line would be approximately 5.6 miles long and constructed between the proposed LSPGC Collinsville Substation and PG&E's existing Pittsburg Substation. The transmission line would consist of the following three segments:

- Overhead Segment: This segment would be constructed on TSPs between the proposed LSPGC Collinsville Substation and a proposed in-river transition structure located just south of the northern shore of the Sacramento River.

[5] On-site electrical demand was determined by estimating the HVAC equipment requirements for each GIS enclosure. This equipment is assumed to be the primary load during operation.

Table 3-4: Overhead Transmission and Distribution Summary

ROW Width (feet)	Approximate Length (miles)	Typical Structure Spacing (feet)	Structure Type	Installation Type	Approximate Quantity	Approximate Permanent Disturbance Area Per Structure (square feet)	Typical Aboveground Height (feet)	Typical Base Size (feet)	Typical Foundation Diameter (feet)	Typical Embedment Depth (feet)
LSPGC 230 kV Transmission Line										
100 to 230	1	800 to 1,300	TSP	Pier Foundation	4	314	70 to 150	N/A	12	20 to 50
				Direct Bury	2	314	70 to 150	N/A	6	15 to 25
			Six-pole guyed structure	Direct Bury	1	6,600	70 to 150	N/A	12	15 to 25
			In-river transition structure	Driven Piles with Pile Cap	1	5,200	70 to 90	130 by 40	2.5	30 to 80
LSPGC 230 kV Underground Segment										
10	0.6	N/A	Riser structure	Pier Foundation	2	314	50 to 100	N/A	6	25 to 40
PG&E 500 kV Interconnection										
150 to 350	2.5~~8~~	800 to 1,500	LST	Pier Foundation	11~~3~~	1,620	80 to 120	50	4 to 8	20 to 40
			TSP	Pier Foundation	7 (3-Pole)	1620	70-145	8	4-8	20-40
PG&E 12 kV Distribution Line										
20	0.9	275	Wood	Direct Bury	21	314	40	N/A	3 to 4	6 to 10

- Submarine Segment: This segment would be directly buried, starting at the previously described in-river transition structure located near the northern shore of the Sacramento River, and would travel generally southwest until reaching a proposed onshore underground utility vault located just south of the southern shore of the Sacramento River near PG&E's existing Pittsburg Substation.

Underground Segment: This segment would be installed within proposed underground duct banks between the previously described onshore underground utility vault until reaching proposed riser structures located adjacent to PG&E's existing Pittsburg Substation.

These segments are described in the subsections that follow. A typical drawing of the structures to be installed for the proposed LSPGC 230 kV Transmission Line is provided as Figure 3-6: 230 kV Transmission Line Structures Typical Drawing.

Overhead Segment

The proposed LSPGC 230 kV Overhead Segment would be approximately 0.9 mile long and constructed on approximately six new TSP structures—approximately two TSP structures would be directly embedded in concrete backfill and approximately four TSP structures would be mounted to pier foundations—one guyed six-pole dead-end TSP structure, and one pile cap-mounted, in-river transition structure. The typical dimensions for each structure are included in Figure 3-4: Proposed Substation General Arrangement.

Approximately four TSP structures would have a vertical double-circuit orientation. The six-pole guyed dead-end structure and the single in-river transition structure would utilize a horizontal double-circuit configuration. In locations where the line angle is relatively straight, the proposed TSPs would be directly buried with the bottom of each pole supported by approximately 6 inches of gravel at the base of the hole and then backfilled with concrete. Where the line angle changes or additional support is required, the proposed TSPs would be mounted on drilled pier foundations, typically between 15 and 50 feet deep. The six-pole guyed dead-end structure would be directly embedded into concrete backfill and would also be supported by guy wires connected to guy anchors. Guy anchors would typically be located approximately 50 feet from the structure, depending on the local topography and final engineering design. The use of "guy poles" is not anticipated.

The in-river transition structure, consisting of three vertical poles connected by horizontal steel members would be supported using driven piles topped with a concrete pile cap. Approximately eight to twelve 18 to 30-inch-wide and 0.75-inch-thick tube piles would be driven into the sediment and embedded to a depth of approximately 30 to 80 feet. An approximately 40-foot by 130-foot concrete cap would be constructed on the piles, on which the transition poles would be installed. The concrete cap would be between 18 and 48 inches tall and would sit above the mean high-water level. Up to six J-tubes (one per cable) made of rigid steel would be installed between each set of vertical poles to serve as a cable protection system. The J-tubes would have a diameter slightly greater than the 10-inch-diameter cable. From the pile cap, the J-tubes would extend down at an angle toward the riverbed to facilitate the transition to the submarine cable. A typical drawing of the in-river transition structure is provided in Figure 3-7: In-River Transition Structure Typical Drawing. An approximately 8-foot-tall chain-link fence would be erected around the perimeter of the in-river transition structure's concrete cap. Any potential lighting or

other markings associated with the in-river transition structure would be determined in consultation with the United States (U.S.) Coast Guard (USCG) as required by APM TRA-1. This APM would require a Navigational Study to be prepared and presented to the USCG for its review.

The structures associated with this segment would have a non-reflective finish and would be a neutral gray color to the extent that equipment and components with non-reflective finish are commercially available. Construction activities associated with the overhead transmission structures and conductors are described in more detail in Section 3.5.5 Transmission Line Construction (Above Ground) and Section 3.5.6 Transmission Line Construction (Below Ground).

Preliminarily, it is anticipated that Aluminum-Conductor Steel-Supported (ACSS) conductors, with a cross-sectional area of 1351.5 kcmil configured in trapezoidal-shaped strands (ACSS/TW "Martin"), would be installed on the structures. It is anticipated that the conductors would have a typical horizontal spacing of 18 inches per phase.[6] The minimum line to ground clearance would be 33 feet.

Submarine Segment

The approximately 4.5-mile-long proposed LSPGC 230 kV Submarine Segment would involve directly burying up to six submarine cables between the proposed in-river transition structure and a proposed underground utility vault approximately 100 feet south of the southern shore of the Sacramento River. The cables would be buried 6 to 15 feet below the sediment surface, or as specified by engineering and/or permitting agency requirements. It is anticipated that each submarine cable may contain three power cores with copper conductors encased in many protective layers, including insulation, a water blocking layer, metallic sheath (lead alloy), anti-corrosion sheath, filler compatible with sea water, binder tape, armor bedding (polypropylene yarn), wire armor (stainless steel wires), and an outer serving layer (polypropylene yarn with bitumen and black/yellow stripe). The cables would be insulated with an extruded layer of cross-linked polyethylene (XLPE) that is qualified, manufactured, and tested to ensure it meets the IEC 62067 and CIGRE TB 490 standards. The cables would typically be spaced approximately 50 to 90 feet apart to reduce mutual heating and provide safe construction clearances. Construction activities associated with the Submarine Segment are described in more detail in Section 3.5.6 Transmission Line Construction (Below Ground).

Underground Segment

The approximately 0.3-mile-long proposed LSPGC 230 kV Underground Segment would involve the construction of two new underground duct banks to connect an onshore underground utility vault, as shown in Figure 3-8: Utility Vault Typical Drawing, to two new riser poles located directly adjacent to PG&E's existing Pittsburg Substation, as shown in Figure 3-9: Riser Structure Typical Drawing. The utility vault would be an area comprised of up to six separate transition joint bays each measuring approximately 47 feet long, 10 feet wide, and 9 feet deep. It would be installed within an excavation that would allow a minimum 36 inches of cover. The underground duct banks would typically be comprised of ten 8-inch, one 4-inch, and two to three

[6] kcmil (1,000 circular mils [cmils]) is a quantity of measure for the size of a conductor; kcmil wire size is the equivalent cross-sectional area in thousands of cmils. A cmil is the area of a circle with a 0.001 inch diameter.

Figure 3-6: 230 kV Transmission Line Structures Typical Drawing

Figure 3-7: In-River Transition Structure Typical Drawing

Figure 3-8: Utility Vault Typical Drawing

Figure 3-9: Riser Structure Typical Drawing

2-inch polyvinyl chloride (PVC) conduits encased in concrete. Each duct bank would be approximately 6 feet wide and 2.5 feet tall. A typical drawing of the proposed underground duct bank is included as Figure 3-10: Underground Duct Bank Typical Drawing. The up to nine underground cables per circuit (up to three cables per phase) would be installed inside of the 8-inch PVC conduits with at least one spare. Each 230 kV underground conductor would be approximately 5 to 6 inches in diameter and contain a copper conductor surrounded by layers of binding tape, metallic sheaths, XLPE insulation, and protected by a thick HDPE jacket. The duct banks would terminate at two new riser structures. Each riser structure would be constructed using a TSP H-frame measuring approximately 50 feet long and 50 to 85 feet tall. Each riser structure would be set on drilled pier foundations.

3.3.4.2 Proposed PG&E Facilities

3.3.4.2.1 PG&E 500 kV Interconnection

The proposed PG&E 500 kV Interconnection would require the removal of ~~one~~two existing LST and the construction of approximately 11<u>4</u> single-circuit LSTs <u>& 7 (3-Pole) Tubular Steel Poles (TSP)</u> between PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line and the proposed LSPGC Collinsville Substation. The LSTs <u>& TSPs</u> would be mounted on pier foundations and similar in design to those used along PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line. PG&E would conduct an induction study to evaluate the potential effects of the proposed PG&E 500 kV Interconnection on the pipelines in the vicinity, and would follow applicable standards of the NESC pertaining to the need for interference analysis and anti-corrosion/cathodic protection, pending final design and engineering of the interconnections. A typical drawing of the LSTs anticipated to be used for the proposed PG&E 500 kV Interconnection is provided as Figure 3-11: 500 kV Transmission Line Structures Typical Drawing, and the typical dimensions associated with these structures are provided in Table 3-4: Overhead Transmission and Distribution Summary.

3.3.4.2.2 PG&E Pittsburg Substation

PG&E's existing Pittsburg Substation would be modified by shifting line positions, bus work, adding and replacing electrical equipment so that the proposed LSPGC 230 kV Transmission Line can be connected. All modifications would occur within the existing fence line.

3.3.5 Other Potentially Required Facilities

Modifications to PG&E's existing Vaca Dixon and Tesla substations would involve modifying the line relays in addition to potential series capacitor modifications at PG&E's existing Vaca Dixon Substation. Microwave modifications may also be needed at these substations to provide a high-speed communication path to the proposed LSPGC Collinsville Substation. These substations are depicted in Figure 3-1: Project Overview Map.

A new overhead electric distribution line would be extended to provide power for construction from PG&E's existing distribution line. The distribution line would be installed on approximately 21 new wood poles that would be installed along Stratton Lane. Section 3.5.3.3 Temporary Power provides more information about this distribution line extension, which is depicted in Attachment 3-A: Detailed Route Map. Guy wires may be required to support the proposed distribution poles; however, guy poles are not anticipated.

According to Title 14, Section 77.9.e.1 of the Code of Federal Regulations (CFR), any object that will be shielded by existing structures of a permanent and substantial nature or by natural terrain or topographic features of equal or greater height and will be located in the congested area of a city, town, or settlement where the shielded structure will not adversely affect safety in air navigation does not require the filing of notice for construction or alteration. Multiple wind turbines greater than 200 feet in height are located adjacent to the Proposed Project. In addition, all structures have been screened with the FAA's online tool, and none have triggered the need for official noticing. As a result, additional noticing to the FAA and any other entities is not warranted and aviation markings or lighting are not anticipated to be required for the Proposed Project. Upon completion of the final design, LSPGC would confirm these results and file any official notices with the FAA for official study and determination of lighting and/or marking requirements for all structures.

3.3.6 Future Expansions and Equipment Lifespans

The Proposed Project is anticipated to have an equipment lifespan of 50 years. A more detailed discussion of each facility is included in the subsections that follow.

3.3.6.1 LSPGC Facilities

While LSPGC is not planning to implement modifications to the Proposed Project facilities described previously; the Proposed Project has incorporated sufficient space within the proposed LSPGC Collinsville Substation property to allow for potential future modification of the substation to support increased future renewable energy-generating capacity on the electrical grid. If implemented, the potential future modification would require the proposed LSPGC Collinsville Substation's western fence line to be extended approximately 220 feet to the west, adding approximately 4 acres to the site's footprint. This modification would allow for the addition of two 500 kV bays and three 230 kV bays. The substation site has sufficient space to accommodate this and future modification should it be required.

The potential modification would be determined by CAISO planning or as needed by interconnection agreements. The estimated time frame would be approximately 10 years after the energization of the proposed LSPGC Collinsville Substation.

No expansion and/or extension is planned for the proposed LSPGC 230 kV Transmission Line.

3.3.6.2 PG&E Facilities

Future expansion of the proposed PG&E 500 kV Interconnection is not anticipated due to the nature of this facility. In addition, no future expansion or modification to PG&E's existing Pittsburg, Vaca Dixon, or Tesla substations is anticipated as part of the Proposed Project.

No expansion and/or extension is planned for the proposed PG&E 12 kV Distribution Line.

3.3.7 Below-Ground Conductor/Cable Installations

3.3.7.1 LSPGC Facilities

For the proposed LSPGC Collinsville Substation, below-grade work would include the construction of equipment foundations, oil containment for transformers, the grounding grid, and

Figure 3-10: Underground Duct Bank Typical Drawing

Figure 3-11: 500 kV Transmission Line Structures Typical Drawing

conduit; and erection of the control enclosures. The maximum depth of disturbance within existing soil at the proposed LSPGC Collinsville Substation site would be approximately 40 feet at the location of the dead-end pier foundations. Typical below-ground conductor and/or cable would be 2 to 4 feet below ground surface.

Below-ground cables would be installed as part of the proposed LSPGC 230 kV Submarine Segment, 230 kV Underground Segment, and Telecommunications Line, as described previously in Section 3.2.2.1.3 LSPGC 230 kV Transmission Line and Section 3.3.9 Telecommunication Lines.

3.3.7.2 PG&E Facilities

No PG&E transmission lines are planned below ground. Modifications within existing substations may include underground facilities. Work immediately adjacent to PG&E's existing Pittsburg, Tesla, and Vaca Dixon substations may include underground information technology or other facilities.

3.3.8 Electric Substations and Switching Stations

The proposed LSPGC Collinsville Substation would include seven single-phase 500/230 kV transformers. Both the 500 kV and 230 kV switchgear would be gas-insulated. The substation would include one approximately 120-foot by 40-foot GIS enclosure with an attached approximately 40-foot by 50-foot relay control enclosure for the 500 kV equipment. The substation would also include one approximately 105-foot by 32-foot GIS enclosure with an attached approximately 30-foot by 32-foot control enclosure for the 230 kV equipment.

The Proposed Project would include a SCADA system that would consist of fully redundant servers; power supplies; and Ethernet LAN and WAN connections, routers, firewalls, and switches. The proposed LSPGC Collinsville Substation would include telecommunications paths along the proposed PG&E 500 kV Interconnection (i.e., microwave tower and antenna) and LSPGC 230 kV Transmission Line (i.e., OPGW). A more detailed discussion of the proposed telecommunications facilities is provided in Section 3.3.9 Telecommunication Lines.

3.3.9 Telecommunication Lines

The Proposed Project would involve installing two separate telecommunications paths to the proposed LSPGC Collinsville Substation. The first path would involve constructing a new microwave tower up to 199 feet in height at the proposed LSPGC Collinsville Substation, as described in Section 3.3.4.1.1 Proposed LSPGC Collinsville Substation. The second path would originate within the City of Pittsburg. Two new underground fiber optic cables would be installed generally within existing streets using the horizontal directional drilling (HDD) method of construction to connect a series of handholes from a residential neighborhood located east of PG&E's existing Pittsburg Substation to a new fiber hub installed adjacent to PG&E's existing Pittsburg Substation and the new utility vault associated with the proposed LSPGC 230 kV Underground Segment. Each pre-fabricated handhole, measuring approximately 15 inches square at the surface level and 13 inches deep, would be installed at grade and used to facilitate installation and splicing of the fiber. Figure 3-12: Handhole Typical Drawing depicts the handholes that would be used. The proposed route is depicted in Attachment 3-A: Detailed Route Map. The fiber hub and approximately 5-foot by 5-foot enclosure would be used to splice the

fiber optic cables to the cables installed as part of the proposed LSPGC 230 kV Submarine Segment. From that point, one telecommunications path would continue along the cables associated with the proposed LSPGC 230 kV Underground Segment until reaching PG&E's Pittsburg Substation. A second telecommunications path would continue along the submarine cables associated with the proposed LSPGC 230 kV Submarine Segment until reaching the in-river transition structure. From the in-river transition structure, a single OPGW would be installed along the proposed LSPGC 230 kV Overhead Segment above the primary conductors until reaching the proposed LSPGC Collinsville Substation, completing the second telecommunications path. PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line is not outfitted with a telecommunications line, and there are no plans to add one as part of the Proposed Project.

3.4 LANDOWNERSHIP, RIGHTS-OF-WAY, AND EASEMENTS

Land entitlement issues are not part of this regulatory proceeding, in which the CPUC is considering whether to grant or deny LSPGC's application for a Certificate of Public Convenience and Necessity (CPCN) to construct new electrical facilities. Rather, any land rights issues would be resolved in subsequent negotiations and/or condemnation proceedings in the proper jurisdiction, following the decision by the CPUC on LSPGC's application (see, for example, Jefferson-Martin 230 kV Transmission Project, A.02-04-043, D.04-08-046, p. 85).

3.4.1 Land Ownership

The parcels where the proposed LSPGC Collinsville Substation, LSPGC 230 kV Overhead Segment, LSPGC 230 kV Underground Segment, and PG&E 500 kV Interconnection would be constructed are privately or utility owned. LSPGC would acquire land rights for approximately 32 acres in this area to accommodate the proposed LSPGC Collinsville Substation facility, including all considerations for site grading, fencing, staging areas, equipment, internal circulation, and other operational considerations. The proposed LSPGC 230 kV Submarine Segment would be located on lands that are owned by the state, the City of Pittsburg, and a private landowner. PG&E owns the existing approximately 38.4-acre parcel where PG&E's existing Pittsburg Substation is located, as well as the parcels where PG&E's existing Vaca Dixon and Tesla substations are located.

3.4.2 Existing Rights-of-Way or Easements

3.4.2.1 LSPGC Facilities

LSPGC does not have any existing ROWs or easements in the Proposed Project area.

3.4.2.2 PG&E Facilities

PG&E's existing Vaca Dixon-Tesla 500 kV Transmission Line is located within an approximately 200-foot-wide ROW where it would extend to the proposed PG&E 500 kV Interconnection. PG&E does not have any other existing ROWs or easements in the Proposed Project area.

Figure 3-12: Handhole Typical Drawing

3.4.3 New or Modified Rights-of-Way or Easements

3.4.3.1 LSPGC Facilities

LSPGC would obtain the necessary permanent ROWs and easements from each landowner to accommodate the proposed LSGPC components. The width of the ROWs for the LSPGC 230 kV Overhead Segment would generally be 120 feet; however, it would expand to approximately 230 feet to accommodate the six-pole guyed structure and in-river transition structure. The minimum ROW along the proposed LSPGC 230 kV Submarine Segment would typically be approximately 370 feet to accommodate up to six cables typically spaced approximately 50 to 90 feet apart; however, the final ROW width may vary in locations and would not be determined until final engineering is complete. The proposed ROW for each duct bank associated with the proposed LSPGC 230 kV Underground Segment would be approximately 10 feet. The proposed LSPGC Telecommunications Line would be constructed by one or more third parties. It is anticipated that these parties would utilize the road franchise and/or would obtain additional ROW, as needed, for the extension of their system and connection to the proposed LSPGC Collinsville Substation. Geographic information system data for new and modified ROWs are provided in a separate cover.

3.4.3.2 PG&E Facilities

PG&E would secure new rights for installation of the proposed PG&E 500 kV Interconnection by negotiating agreements with each landowner. PG&E's typical ROW width for a single 500 kV transmission line is between 100 and 200 feet. For locations with two adjacent 500 kV transmission lines with a typical separation distance of 150 feet, the typical ROW width is 350 feet, allowing for 80-100 feet from the centerline of each transmission line to the edge of the ROW. The proposed PG&E 500 kV Interconnection lines would each be approximately 1.25 miles long. No development restrictions or existing structures are located within the new easement locations.

3.4.4 Temporary Rights-of-Way or Easements

Temporary construction easements would be required for temporary construction areas (e.g., staging areas and pulling sites) and temporary access roads located outside of the permanent easements that would be acquired by LSPGC and PG&E. All temporary construction areas that would support the construction of the proposed LSPGC Collinsville Substation would be located on the parcel for which LSPGC would acquire rights. All temporary easements would be secured by negotiating with landowners.

3.5 CONSTRUCTION

This section includes an overview of the typical methods that would be used for construction of the Proposed Project. The Proposed Project would be constructed to meet all General Order (GO) 95 requirements, including minimum vegetation and equipment clearances, in addition to the vegetation clearance requirements in California Public Resources Code (PRC) Section 4292 and Title 14, Section 1254 of the CCR.

3.5.1 Construction Access

The Proposed Project would be accessed using existing paved and unpaved roads, new permanent access roads, and temporary access roads. A summary of the anticipated road types is provided in Table 3-5: Access Road Summary and depicted in Attachment 3-A: Detailed Route Map. A more detailed discussion of the access requirements is included in the subsections that follow.

Table 3-5: Access Road Summary

Type of Road	Description	Approximate Total Length (miles)	Typical Width (feet)	Approximate Total Area (acres)
Existing Unpaved Roads	Dirt or gravel roads traversing undeveloped areas primarily used for agricultural purposes or wind farm access	1.6	36	7.0
New Permanent Access Roads (Collinsville Substation Driveway and PG&E Access)	New gravel driveway to be installed to access the substation from Stratton Lane, and a PG&E permanent access road to be installed on the east side of the proposed LSPGC Collinsville Substation to access PG&E's control equipment.	0.1	20	0.1
Temporary Access Roads	Temporary access roads that would be bladed to create a safe path for equipment across primarily undeveloped land or wind farms to access structure locations	2.3	16	4.5
	Temporary access road that would be treated with timber mats to allow watercourse crossing	0.2	16	0.4

3.5.1.1 Existing Access Roads

The Proposed Project area contains an existing network of paved and unpaved access roads that would be used during construction, operations, and maintenance (O&M). Existing paved roads are typically maintained by the counties or city, while unpaved roads are typically on private lands within existing undeveloped areas or that were established to provide access to existing wind farms or PG&E's existing transmission infrastructure. Stratton Lane, which would serve as the primary access point for construction of the proposed LSPGC Collinsville Substation and 230 kV Overhead Segment is a county-maintained and owned road.

Existing paved roads would not typically require improvements prior to use. Existing unpaved roads may require minor improvements, typically within the existing road prism, to allow for the safe travel of construction vehicles and equipment. These improvements could include minor grading, vegetation trimming/removal, and/or the application of road base. Road widening is not proposed as the existing roads are of adequate width (approximately 36 feet) to allow passing. As described in Section 3.5.8.2 Traffic Control, flaggers or other traffic control measures would be

utilized to guide traffic around active work areas in a safe manner. Encroachment permits, as required, would be secured, and any corresponding traffic control plans would be implemented during construction as appropriate.

Incidental damage to existing roads is not expected from Proposed Project activities. Should incidental road damage occur, the roads would be restored to pre-construction conditions or better as required by applicable permits and/or landowner agreements.

3.5.1.2 New Access Roads

3.5.1.2.1 Temporary

Where existing access is not available and surface conditions are suitable, approximately 16-foot-wide temporary access roads would be established during construction to access construction areas. Prior to use, vegetation would be removed and the area may be lightly bladed to establish a safe path for construction equipment and vehicles. Extensive grading, compaction via a vibratory roller, and/or road base placement would not be required along temporary access roads. As described in Section 3.5.1.4 Watercourse Crossings, timber mats would be temporarily applied to access road alignments that would pass through existing wetlands. Temporary access roads are depicted in Attachment 3-A: Detailed Route Map. Following construction, all temporary access roads would be restored to pre-construction conditions as described in Section 3.7.3.2 Site Restoration.

3.5.1.2.2 Permanent

A new, approximately 125-foot-long, 20-foot-wide new driveway would be constructed to connect the primary entrance to the proposed LSPGC Collinsville Substation to Stratton Lane. This access road would be graded and rocked per the final Proposed Project design. On the east side of the substation, PG&E would construct an approximately 336-foot-long, 20-foot-wide new access road to access control equipment. The locations of the proposed new roads are depicted in Attachment 3-A: Detailed Route Map.

3.5.1.3 Overland Access Routes

No overland access routes are anticipated to be used for the LSPGC components of the Proposed Project. PG&E may use overland access routes to access some of its existing facilities.

3.5.1.4 Watercourse Crossings

The Proposed Project would be located primarily on existing agricultural land or lands being used as wind farms. Although watercourses have been identified within the Proposed Project area, most of these watercourses would be avoided during construction and would be spanned by the proposed LSPGC 230 kV Overhead Segment and PG&E 500 kV Interconnection. One proposed 230 kV TSP and six-pole structure would be constructed within an existing wetland, located south of Stratton Lane. Access in this area would be established by applying timber mats along the proposed access road alignment, which may overlap wetlands or other waters, as shown in Attachment 3-A: Detailed Route Map. Following construction, the timber mats would be removed. Any timber mats that would be placed within jurisdictional waters would be permitted in accordance with appropriate federal and state regulations. LSPGC would secure all

required permits prior to the placement of any timber mats and would adhere to all permit conditions. No culverts would be installed as part of the Proposed Project.

3.5.1.5 Helicopter Access

Light-duty helicopter use is anticipated to support construction of the Proposed Project components located north of the Sacramento River. These activities may include transportation of construction workers, delivery of equipment and materials to temporary construction areas, hardware installation, and/or installation/removal of overhead conductor/cable. In addition, a heavy-duty helicopter is anticipated to support construction of the proposed PG&E 500 kV Interconnection structures.

Helicopter takeoff and landing areas would be located within each pulling site and staging area. Each landing zone would be approximately 200 feet by 200 feet. In addition, local public and/or private airports or airstrips may be used to support helicopter operations. The proposed LSPGC Collinsville Substation, PG&E 500 kV Interconnection, and LSPGC 230 kV Overhead Segment would be located approximately 12 miles southeast of the Travis Air Force Base and approximately 10 miles southwest of the Rio Vista Municipal Airport. Helicopter refueling would typically occur off site at local airports or airstrips; however, refueling at staging areas may also occur.

Helicopter operators would coordinate flight paths from local airports or airstrips with local air traffic control, as appropriate. Once in the vicinity of the Proposed Project, helicopter flight paths would generally follow the Proposed Project alignment. The anticipated hours and duration of helicopter operations are provided in Table 3-11: Proposed Construction Equipment and Workforce. It is anticipated that the light-duty helicopter use would involve a Hughes 500, Bell 429, MD 600 N, or similar model. The heavy-duty helicopter use would involve a CH-47D Chinook, Sikorsky S61, Sikorsky S64, or similar model.

As required, a Helicopter Plan would be prepared and a Congested Area Plan pursuant to Title 14, Section 133.33(d) and Title 77 of the CFR would be developed with the FAA Flight Standards District Office in Fresno, which has jurisdiction over the Proposed Project area.

3.5.2 Staging Areas

3.5.2.1 Staging Area Locations

It is anticipated that approximately five staging areas would be used to support construction, as summarized in Table 3-6: Staging Area Summary. Three staging areas would be in the Collinsville area in Solano County and used for longer-term construction staging needs for work on the proposed LSPGC Collinsville Substation, LSPGC 230 kV Overhead Segment, LSPGC 230 kV Submarine Segment, and PG&E 500 kV Interconnection. Two staging areas would be located adjacent to PG&E's existing Pittsburg Substation in the City of Pittsburg and would be used for longer term construction staging needs for work on the proposed LSPGC 230 kV Submarine Segment, proposed LSPGC 230 kV Underground Segment, and PG&E's modifications to its existing Pittsburg Substation.

Table 3-6: Staging Area Summary

Name	Location	Condition	Approximate Size (acres)
North of Stratton Lane	Directly north of the proposed LSPGC Collinsville Substation and Stratton Lane	Inactive Agriculture	11.1
East of Stratton Lane	Directly east of the proposed LSPGC Collinsville Substation and Stratton Lane	Inactive Agriculture	9.8
SMUD	Approximately 1 mile northeast of the proposed LSPGC Collinsville Substation	Disturbed	9.6
Pittsburg Substation West	Directly west of PG&E's existing Pittsburg Substation	Disturbed	4.9
Pittsburg Substation East	Directly east of PG&E's existing Pittsburg Substation	Disturbed	3.4
Total	**--**	**--**	**38.9**

Temporary perimeter and/or security fencing with gates would be installed at the staging areas as appropriate. The type and extent of fencing would be adjusted at each staging area to match the planned activities and storage requirements. The staging areas would be connected to access roads via a temporary driveway or existing access roads. The staging areas are depicted in Attachment 3-A: Detailed Route Map.

3.5.2.2 Staging Area Preparation

If not previously prepared, staging areas preparation would involve clearing, topsoil salvage, grubbing, and limited grading. Gravel may be used to line the ground at the staging area to avoid the creation of unsafe surface conditions and unnecessary sediment transport off site. Prior to the application of the gravel, fabric would be laid on the ground at the staging area to facilitate removal during the decommissioning of the staging areas. If necessary, access would be established from adjacent existing roads.

Staging areas may be used as a refueling area for vehicles and construction equipment; as an equipment wash station; for assemblage; for storage of material and equipment, storage containers, construction trailers, and portable restrooms; and for parking and lighting. Some substation equipment (e.g., disconnect switches, instrument transformers, take-off towers, insulators, conductors, bus, connectors, conduit, cable trench, and rebar) would be received and temporarily stored at the staging area prior to installation.

Construction workers would typically meet at the staging area each morning to park their vehicles. All construction equipment and vehicles would be parked within the staging area while inactive and at the completion of each workday, where and when practical.

Perimeter security fencing, typically consisting of an approximately 10-foot-tall chain-link-style fence topped with approximately 1 foot of barbed wire, may be used to establish secure areas within the equipment staging areas. This fencing would be utilized to secure expensive equipment and would be locked nightly. Temporary lighting may be installed as a security measure. Perimeter fencing, typically consisting of 4-foot-tall plastic orange security fencing may be utilized to denote the extent of the staging area/work area.

Temporary construction power would be provided to the proposed LSPGC Collinsville Substation parcel via extension of the distribution line, as described in Section 3.5.4.2 Utilities. Temporary generators would be a contingency if distribution power is unavailable in a timely manner. Temporary construction power at other staging areas is not anticipated to be required, and temporary generators may be utilized, if needed.

3.5.3 Construction Work Areas

3.5.3.1 Construction Work Areas

A description of the types of work areas and the associated activities that would occur at each work area are described in the subsections that follow and depicted in Attachment 3-A: Detailed Route Map.

3.5.3.1.1 Helicopter Landing Zones and Touchdown Areas

As described in Section 3.5.1.5 Helicopter Access, helicopter landing areas would be included at each pulling site and staging area. In addition, helicopters may touch down along access roads or within other construction areas, as appropriate. Helicopter landing zones and touchdown areas may support the following construction activities:

- Dropping off or picking up construction crew members, equipment, and/or materials;
- Dropping off or picking up structures/portions of structures, conductor sock line, conductor pull rope, and/or conductor; and
- Fueling helicopters.

3.5.3.1.2 Vehicle and Equipment Parking, Passing, or Turnaround Areas

Vehicles and construction equipment would utilize Proposed Project-specific construction areas and access roads for equipment parking, passing, or turning around. If required, equipment would typically be stored overnight at staging areas. For security, equipment may be stored in fenced areas of the staging area.

3.5.3.1.3 Railroad, Bridge, or Watercourse Crossings

The Proposed Project would not include any new railroad crossings or bridges. As described in Section 3.5.1.4 Watercourse Crossings, two structures associated with the proposed LSPGC 230 kV Overhead Segment would be constructed within an existing wetland. Approximately 990 feet of temporary access would be established by placing timber matting along the access road alignment as depicted in Attachment 3-A: Detailed Route Map. Following construction in this location, the timber matting would be removed.

3.5.3.1.4 Temporary Work Areas for Facility Installation, Modification, or Removal

Temporary work areas (also referred to as construction work areas) would be established to support the following activities:

- Transmission structure installation;
- Transmission structure removal;
- Distribution line construction;
- Telecommunications line construction;
- Transmission, distribution, and telecommunications conductor/cable installation and splicing;
- Substation construction; and
- Switching operations to accommodate construction activities.

These temporary work areas would facilitate equipment and material storage and use.

3.5.3.1.5 Excavations and Associated Equipment Work Areas

Excavations are anticipated associated with structure installation and substation construction. No other excavations are anticipated. All identified work areas are inclusive of the required excavation limits; as a result, specific temporary work areas for excavations have not been identified. Table 3-7: Typical Excavation Dimensions provides the anticipated excavation dimensions required to construct subsurface features.

3.5.3.1.6 Temporary Guard Structures

Guard structures are temporary facilities that are installed, as appropriate, at transportation and utility crossings prior to conductor installation and removal. Due to the lack of transportation and utility crossings at the proposed overhead conductor locations, guard structures are not anticipated to be required as part of the Proposed Project.

3.5.3.1.7 Pull-and-Tension/Stringing Sites

Pulling sites are temporary construction areas that would be used to stage and operate equipment necessary for the installation or removal of conductor/cable. Pulling site preparation would involve grubbing and limited grading. Typically, one pulling site would be located at each end of a "wire pull" to facilitate this process. The conductor installation/removal process is described in more detail in Section 3.5.5.2 Aboveground and Underground Conductor/Cable.

3.5.3.1.8 Splice Sites, Conductor, and Overhead Ground Wire Removal

Conductor and/or overhead ground wire removal would be facilitated using the pulling sites described in Section 3.5.3.1.7 Pull-and-Tension/Stringing Sites.

3.5.3.1.9 Jack-and-Bore Pits, Drilling Areas, and Pull-Back Areas for HDD

The Proposed Project would not involve the use of jack-and-bore construction techniques. HDD construction methods would be used to construct the proposed LSPGC Telecommunications Line. It is anticipated that an approximately 5-foot by 10-foot work area would be established

Table 3-7: Typical Excavation Dimensions

Proposed Project Feature	Typical Excavation Dimensions
LSPGC Collinsville Substation	
Transformer Bank	135 feet long, 60 feet wide, 8 feet deep
500 kV GIS and Control Enclosure	170 feet long, 40 feet wide, 4 feet deep
230 kV GIS and Control Enclosure	180 feet long, 32 feet wide, 4 feet deep
Dead-End	6-foot-diameter, 40 feet deep
LSPGC 230 kV Overhead Segment	
TSP (Pier Foundation)	12-foot-diameter, 20 to 50 feet deep
TSP (Direct Bury)	6-foot-diameter, 15 to 25 feet deep
Six-pole Guyed Structure (Direct Bury)	12-foot-diameter, 15 to 25 feet deep
LSPGC 230 kV Underground Segment	
Transition Vault	50 feet long, 15 feet wide, 15 feet deep
Duct Bank	3 to 6 feet deep, 7 to 10 feet wide
Riser Structure (Pier Foundation)	6-foot-diameter, 25 to 40 feet deep
PG&E 500 kV Interconnection	
LST (Pier Foundation)	4- to 8-foot-diameter, 20 to 40 feet deep
TSP (Pier Foundation)	4- to 8-foot-diameter, 20 to 40 feet deep
PG&E 12 kV Distribution Line	
Wood Pole (Direct Bury)	3- to 4-foot-diameter, 6 to 10 feet deep
LSPGC Telecommunications Line	
Handhole/HDD Entry/Exit Pit	1.5 feet by 1.5 feet, 1.5 feet deep

near each of the approximately 27 handholes that would be installed. These work areas would typically be located on paved or landscaped areas and would be used to stage the drilling equipment, complete the cable installation, and install the handholes.

3.5.3.1.10 Retaining Walls

The Proposed Project would not involve the construction of retaining walls.

3.5.3.2 Work Area Disturbance

Implementation of the Proposed Project would result in both temporary and permanent impacts. Table 3-8: Work Area Disturbance provides work area dimensions (including both temporary and permanent footprints) for each Proposed Project component. Attachment 3-A: Detailed Route Map depicts the locations of the anticipated temporary and permanent disturbance areas associated with the Proposed Project.

3.5.3.3 Temporary Power

To provide temporary power and a backup power source, a nearby existing overhead distribution system would be tapped. PG&E would install a distribution line on wood poles to provide power to the proposed LSPGC Collinsville Substation site and associated staging area during construction. If distribution power is not available in a timely manner, temporary generators would be used as a contingency for power during construction. The proposed distribution line supporting the proposed LSPGC Collinsville Substation would also serve the facility during O&M as a backup power source. Each pole of the distribution line would disturb approximately 0.04 acre for a total disturbance of approximately 0.8 acre for the 21 poles. The other staging areas would rely on temporary generators for power during construction, if needed.

3.5.4 Site Preparation

3.5.4.1 Surveying and Staking

The centerline would be surveyed and marked at line-of-sight intervals, at points of intersection (including offset stakes marking the edges of the access road ROW), and at all known underground facilities. Any sensitive biological, cultural, paleontological, or hydrological resources, where appropriate, would also be clearly marked to restrict construction activities and equipment from entering these areas.

3.5.4.2 Utilities

Prior to initiating construction in any given area, all utility companies with utilities located within or crossing the Proposed Project ROW would be notified to locate and mark existing underground facilities along the entire length of the Proposed Project's current construction area. No subsurface work would be conducted that would conflict with (i.e., directly impact or compromise the integrity of) a buried utility. In the event of a conflict, areas of subsurface excavation or pole installation would be realigned vertically and/or horizontally, as appropriate, to avoid other utilities and provide adequate operational and safety buffering. In instances where separation between third-party utilities and underground excavations would be less than 5 feet, the intended construction methodology would be submitted to the owner of the third-party utility

Table 3-8: Work Area Disturbance

Disturbance Area Type	Disturbance Type	Typical Dimensions (feet)	Approximate Quantity	Approximate Disturbance Area (acres)
Temporary Access Road	Temporary	16 feet wide	16	3.7
Staging Area	Temporary	Varies	5	32.3
Structure Work Area	Temporary	200 by 200 (500 kV) 120 by 200 (230 kV) 40 by 40 (Distribution)	42	16.1
	Permanent	20-foot-diameter (Tangent TSP, Dead-End TSP, and Wood Distribution Pole) 60 by 27 (500 kV LST) 20-foot-diamter (Six-Pole Dead-End TSP) 130 by 40 (In-River Transition Structure)	42	0.8
Pulling Site	Temporary	500 by 280 (500 kV) 600 by 100 (230 kV)	18	23.0
Utility Vault Work Area	Temporary	330 by 315	1	1.3
Underground Duct Bank Work Area	Temporary	1,070 by 50 2,000 by 50	2	2.0
Riser Pole Work Area	Temporary	50 by 30	2	< 0.1
Handhole/HDD Work Area	Temporary	10 by 5	27	< 0.1
LSPGC Collinsville Substation	Permanent	930 by 780 125 by 20 (Driveway) 30-foot-buffer on substation wall (Fire Break)	1	11.1
	Temporary	1,140 by 1,560	1	12.6

Notes:

- Approximately 200-foot by 200-foot helicopter landing zones would be included within staging areas and select pulling sites.
- All salvaged topsoil would be stored on site in the immediate vicinity of temporary disturbance areas, at a nearby approved work area, or at a staging area. Exact stockpile locations have not been identified as geotechnical investigations have not been completed and quantities of stockpile salvage are unknown.
- The identified disturbance areas are inclusive of any required excavation limits.
- All work at existing PG&E substations would occur within their existing fence lines.
- The reported disturbance area removes overlap between work areas

for review and approval at least 30 days prior to construction. Exploratory excavations (e.g., potholing) would be conducted, as appropriate, to verify the locations of existing facilities in the field. Construction methods would be adjusted as necessary to ensure that the integrity of existing utility lines is not compromised. No existing overhead utilities would need to be relocated to accommodate the Proposed Project.

The proposed LSPGC 230 kV Submarine Segment would be located in proximity to the Transbay Cable, an operational single-circuit direct current 200 kV underwater transmission line. The Transbay Cable exits the water and connects to PG&E's existing Pittsburg Substation. At this time, final engineering has not been completed and the need for a crossing of the Transbay Cable is unknown. Should a crossing of the Transbay Cable be required, LSPGC would coordinate with Transbay Cable LLC/NextEra Energy Transmission LLC. It is not anticipated that any other underground utilities would be identified along any of the Proposed Project components. In the event that any other underground utilities are identified, LSPGC and/or PG&E would work with the owner of those utilities to determine if design changes can be made or if relocation procedures and locations are necessary.

As described previously in Section 3.5.3.3 Temporary Power, a new overhead electric distribution line would be installed to provide power for construction from an existing distribution line (proposed PG&E 12 kV Distribution Line). The proposed distribution line would be installed on approximately 21 new wood poles that would be installed along Stratton Lane. Section 3.5.5 Transmission Line Construction (Above Ground) provides a description of the construction techniques that would be used to install the distribution line.

3.5.4.3 Vegetation Clearing

Vegetation would be trimmed or removed within construction work areas to facilitate the safe construction of the Proposed Project and reduce the potential for fire. Only the minimum amount of vegetation clearing would be conducted to enable safe access and construction.

Vegetation removal would be completed utilizing mechanized removal equipment or by hand using chain saws or other hand-held equipment. During temporary grading activities, any disturbed topsoil would be salvaged, where appropriate, to a maximum depth of 6 inches, or to the actual depth if shallower, for on-site storage and use in site restoration. Salvaged topsoil material would be kept on site in the immediate vicinity of temporary disturbance areas, at a nearby approved work area, or at a staging area to be used in the restoration of temporarily disturbed areas as appropriate.

3.5.4.4 Tree Trimming and Removal

Tree trimming and removal are not anticipated as part of the Proposed Project. However, trimming and removal would be conducted according to current standards and regulatory requirements. PG&E's easements would typically include the right to remove trees anywhere within the easement that could pose a threat to the lines or adjacent resources.

3.5.4.5 Work Area Stabilization

Work areas would be stabilized using the best management practices (BMPs) described in one or more Proposed Project-specific Storm Water Pollution Prevention Plans (SWPPPs) and as

discussed in more detail in Section 5.10 Hydrology and Water Quality. The SWPPP BMPs would remain in place and would be maintained until new vegetation is established, as defined in the SWPPP(s). Typical BMPs that would be used for work area stabilization are presented in Section 3.5.9 Dust, Erosion, and Runoff Controls. With the application of typical BMPs and minor grading at select work areas, as appropriate, no slope stabilization issues are anticipated.

3.5.4.6 Grading

Staging areas and construction work areas would be located in generally flat areas; however, minor grading and/or vegetation removal would occur as necessary to provide a safe area for construction. If required, sites would be graded to maintain the direction of the natural drainage and would be designed to prevent ponding and erosion.

The proposed LSPGC Collinsville Substation site would require more substantial grading to prepare it for development. Generally, grading and excavation would be completed such that the site meets the Proposed Project's design specifications and matches proposed grades. During earthwork, soils and other surficial deposits that do not possess sufficient strength and stability to support structures would be removed from the site. Removal would typically extend to competent materials with high mechanical strength and resistance to erosion and deformation. In addition to general earth-moving quantities, 4 to 8 inches of surface gravel would be imported from a suitable nearby aggregate source and installed as finish stone within the proposed LSPGC Collinsville Substation pad for grounding purposes. An approximately 3-foot-wide band of gravel would also be placed around the substation wall to serve as a fire break. All clean spoils excavated by the Proposed Project would be used on site to balance cut-and-fill calculations, as feasible. All spoils that are not usable and/or contaminated would be sent to a properly licensed landfill facility. Table 3-9: Detailed Collinsville Substation Grading Volumes summarizes the anticipated grading and import/export requirements at the proposed LSPGC Collinsville Substation.

Table 3-9: Detailed Collinsville Substation Grading Volumes

Grading Type	Estimated Volume (cubic yards)
Total Cut	36,000
Total Fill (Select Import and Net Fill)	44,000
Total Export/Wasted	7,000
Total Import (Select Import/Structural Fill)	17,000

3.5.5 Transmission Line Construction (Above Ground)

3.5.5.1 Poles/Towers

Approximately one existing LST would be removed and both new LSTs and TSPs would be installed for the transmission components of the Proposed Project. Wood poles would be installed for the distribution line. The approximate average depth and diameter of excavation and approximate volume of soil to be excavated for all of the Proposed Project structures is summarized in Table 3-10: Proposed Transmission Line and Distribution Line Specifications.

Table 3-10: Proposed Transmission Line and Distribution Line Specifications

ROW Width (feet)	Approximate Length (miles)	Typical Structure Spacing (feet)	Structure Type	Approximate Number of Structures	Approximate Permanent Disturbance Area (square feet)	Foundation Type	Maximum Aboveground Height (feet)	Typical Pole/ Foundation Diameter (feet)	Typical Underground Depth (feet)
LSPGC 230 kV Overhead Segment									
100 to 230	1	800 to 1,300	Tangent TSP	2	314	Direct-bury	180	6	25
			Six-pole dead-end TSP	1	6,600	Direct-bury	180	6	25
			Dead-end TSP	4	314	Drilled Pier	199	12	40
			In-River Transition Structure	1	5,200	Driven Piles with Pile Cap	90	N/A	30 to 80
PG&E 500 kV Interconnection									
150 to 350	2.8	800 to 1,500	LST	11~~3~~	1,620	Drilled Pier	120	4 to 8	30
			TSP	7 (3-Pole)	1620	Drilled Pier	145	4-8	20-40
PG&E 12 kV Distribution Line									
20	0.9	275	Wood	21	314	Direct-bury	40	3	8

No pole topping is anticipated to be required for the Proposed Project. The transmission structures would be designed with sufficient conductor and ground wire spacing so that raptors cannot simultaneously contact two conductors or one conductor and a ground wire, which could cause electrocution (APLIC 2006). Further, appropriate methods to reduce the risks of avian collisions would be incorporated into the Proposed Project design (APLIC 2012).

3.5.5.1.1 Pole/Tower Removal

The proposed PG&E 500 kV Interconnection would require the removal of approximately ~~one~~two existing LST, representing the only planned demolition activities associated with the Proposed Project. One or more cranes would be rigged to the top of the tower and the legs would be cut off just above or at the foundations. Helicopters may be used to remove the existing structure. The tower would then be lowered to the ground, where it would be crushed and/or dismantled prior to being transported off site by flatbed trucks. The removed tower would be transported to a staging area for further disassembly prior to being recycled or disposed of at an approved facility.

Following tower removal, each foundation would be removed to a depth of approximately 2 to 5 feet below grade. The existing concrete would be broken using an excavator with a breaker attachment, and existing rebar would be cut using appropriate tools. The removed material would be loaded into dump trucks for disposal or recycling at an approved facility. Following foundation removal, the void would be backfilled using native spoils previously excavated from the vicinity or imported fill. Excess removed material may be stored temporarily at work sites and ultimately loaded into dump trucks for disposal at an approved facility.

3.5.5.1.2 Pole/Tower Installation

Direct-Bury Poles

Direct-buried poles would be installed along the proposed LSPGC 230 kV Transmission Line and proposed PG&E 12 kV Distribution Line. Each pole would require a hole to be excavated using an auger, backhoe, foam, or hydraulic or pneumatic equipment (e.g., jackhammers and drills). In some locations, steel casing may be placed to stabilize the excavation walls prior to installation of the pole.

Following excavation of the pole hole, the pole would then be installed in the excavated or augured holes, typically by a crane or a line truck with an attached boom. The base would be secured by backfilling with the excavated material, gravel, controlled low-strength material, or concrete in the interstitial space between the wall of the excavated or augured hole and the pole.

In some locations, guy wires would be required to provide additional support to the pole. The guy wire would be attached to the pole, and anchors would be used to secure the guy wire to the ground. Material excavated for foundation construction would be trucked off site or spread across the surrounding area within the ROW.

Pier Foundation-Mounted Poles

The proposed LSPGC 230 kV Transmission Line would require the installation of 230 kV TSPs on concrete pier foundations. Foundation construction would begin by using large augers and drill rigs to complete the required excavations and, if necessary, a reinforcing steel rebar cage

would then be lowered into the excavation. A temporary form extending approximately 2 feet above grade would then be constructed, and a concrete truck would be used to pour concrete and fill the excavation. Each completed foundation would be left to cure for approximately 28 days, then the form would be removed. The approximate average depth and diameter of excavation, approximate volume of soil to be excavated, and approximate volume of concrete or other backfill required are summarized in Table 3-10: Proposed Transmission Line and Distribution Line Specifications. Material excavated for foundation construction would be trucked off site or spread across the surrounding area within the ROW.

After the foundation is cured, TSPs would be delivered to the temporary construction area using a flatbed truck. Cranes would be used to lift and place the proposed poles/pole segments onto the foundation. Cranes and/or bucket trucks would lift workers into elevated positions to attach pole crossarms and other hardware onto the assembled pole. Helicopters may be used instead of cranes.

In-River Transition Structure

The in-river transition structure would be constructed, consisting of three vertical poles connected by horizontal steel members would be supported using driven piles topped with a concrete pile cap. The in-river transition structure construction would begin by utilizing a vibratory hammer or impact hammer to drive approximately eight to twelve 18 to 30-inch-wide and 0.75-inch-thick tube piles into the sediment to an embedded depth of between 30 to 80 feet. Following the pile installation, a form for an approximately 40-foot by 130-foot concrete cap would be constructed atop the piles. The form would be filled with concrete and once cured, the form would be removed and the transition structure components would be installed utilizing similar methods as the pier foundation-mounted poles described previously.

Lattice Steel Towers

The proposed PG&E 500 kV Interconnection would require the installation of LSTs. Each LST would be installed atop up to four pier foundations. Each pier foundation would be constructed using similar methods for the TSP foundations described in the previous subsection.

After the foundations have cured, assembled segments of each LST would be delivered to the temporary construction area using a flatbed truck. Cranes would then move each structure segment into place, and construction crew members would use aerial lift trucks to access the tower and attach the segments using hardware. Helicopters may be used instead of cranes.

3.5.5.2 Aboveground and Underground Conductor/Cable

Aboveground conductor/cable installation and removal (i.e., wire stringing) activities would be conducted similar to the methods detailed in the Institute of Electrical and Electronics Engineers Standards Association Standard 524-2016, Guide to the Installation of Overhead Transmission Line Conductors. Safety devices (e.g., traveling grounds and radio-equipped construction crews) would be in place prior to the initiation of wire-stringing activities.

Wire stringing includes all activities associated with the installation of the conductors onto transmission line structures. These activities include the installation of conductor, telecommunications cable (where applicable), insulators, stringing sheaves (rollers or travelers),

vibration dampeners, weights, suspension, and dead-end hardware assemblies for the entire length of the route.

The following steps describe typical wire-stringing activities:

- Sock Line Threading: Using a bucket truck, a lightweight sock line is threaded through wire rollers attached to each structure and is secured using a camlock device. Alternatively, helicopters may be used to fly the sock line from structure to structure.

- Pulling: The sock line would be used to pull in the conductor pulling rope and/or cable. The pulling rope and/or cable would be attached to the conductor using a special swivel joint to prevent damage to the wire and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel. The new conductor would be installed by utilizing conductor tensioning equipment at the pulling site.

- Splicing, Sagging, and Dead-Ending: After the conductor is pulled in, any necessary mid-span splicing would be performed. The conductor would then be sagged to proper tension and dead-ended to structures.

- Clipping In: After the conductor is dead-ended, the conductors would be secured to all tangent structures in a process called “clipping in.” Once this is complete, spacers would be attached between the conductors of each phase to keep uniform separation between each conductor.

Conductor installation activities would be conducted at pulling sites and structure work areas as depicted in preliminary locations in Attachment 3-A: Detailed Route Map. Pull sites along the 230 kV transmission facilities would typically be 550 feet by 120 feet and spaced approximately 2,000 feet apart, while pull sites along the 500 kV transmission facilities would typically be 600 feet by 200 feet and spaced approximately 3,000 feet apart. If needed, conductor splicing would be performed using compression splices applied in accordance with manufacturer recommendations. Anchor poles may be used in pulling sites during conductor installation activities.

Construction methods for belowground cable installation are described in Section 3.5.6 Transmission Line Construction (Below Ground).

3.5.5.3 Telecommunications

As described previously, two new telecommunications paths would be installed as part of the Proposed Project. The first path would involve installing a PG&E-owned microwave tower at the proposed LSPGC Collinsville Substation. The second path would involve installing two new underground fiber optic cables within the City of Pittsburg’s streets until reaching a new fiber hub located adjacent to and north of PG&E’s existing Pittsburg Substation, as shown in Attachment 3-A: Detailed Route Map. A new underground fiber optic cable would continue from the fiber hub until reaching the utility vault installed as part of the proposed LSPGC 230 kV Transmission Line. These portions of fiber optic cable would be installed using HDD techniques, as described in Section 3.5.6.4 Trenchless Techniques. Within the utility vault, the fiber optic cable would be spliced to one of the proposed submarine cables. A new OPGW cable would be

installed above the primary conductors between the proposed in-river transition structure and the proposed LSPGC Collinsville Substation along the new structures installed as part of the proposed LSPGC 230 kV Overhead Segment. This cable would be installed using similar methods as the primary conductors, as described in Section 3.5.5 Transmission Line Construction (Above Ground).

3.5.5.4 Guard Structures

As described in Section 3.5.3.1.6 Temporary Guard Structures, guard structures are not anticipated as part of the Proposed Project.

3.5.5.5 Blasting

Blasting is not anticipated as part of the Proposed Project.

3.5.6 Transmission Line Construction (Below Ground)

3.5.6.1 Trenching

Unless alternate methods are required to cross existing facilities or sensitive resources, duct banks and utility vault would be installed using open-cut trenching techniques. The duct banks would typically have a double-duct-bank vertical configuration, as shown in Figure 3-10: Underground Duct Bank Typical Drawing, with occasional transitions to a flat configuration to clear substructures in highly congested areas, or to fan out to the proposed utility vault and riser poles, as appropriate. Excavators and other earth-moving equipment would be used to establish trenches 3 to 6 feet deep and 7 to 10 feet wide depending on the duct bank configurations. Excavation to install the utility vault would begin by grading back the shoreline for the jet sled to be pulled onto the shore. Approximately 100 feet from the shoreline, a trench would be excavated that is approximately 155 feet wide, 90 feet long, and 11 feet deep. Depths may vary depending on soil stability and the presence of existing substructures. The trench would be widened and shored where necessary to meet California Division of Occupational Safety and Health (Cal/OSHA) safety requirements. Dewatering is anticipated during trenching and underground duct bank installation activities conducted within proximity of PG&E's existing Pittsburg Substation. The proposed dewatering procedures would be similar to those required to dewater overhead transmission line excavations, as described in Section 3.5.10.2 Dewatering.

At any one time, open trench lengths would not exceed those required to facilitate the installation of the duct banks. Steel plating would be placed over or fencing installed around open trenches, where appropriate, and across those areas that are not under active construction.

Throughout trench excavation and the installation of the duct bank and vault, excavated materials would be hauled off site for disposal. All spoil would be tested in accordance with applicable standards for hazardous materials. All materials would be transported off site and disposed of at an approved facility. Excavated materials may be used as backfill if the material is deemed suitable. In the event that existing concrete must be removed to facilitate trenching activities, concrete saws and other pavement-breaking machines would be used. If this equipment is unable to access the required removal areas, jackhammers would be used on an as-needed basis to break up concrete.

3.5.6.2 Duct Bank Installation

As the trenches for the underground duct banks are excavated, cable conduits (separated by spacers) would be installed and concrete would be poured around the conduits to form the duct banks. Each duct bank would typically consist of approximately 8-inch-diameter PVC conduits, which would house the electrical cables. An approximately 4-inch-diameter conduit would also be included to house ground continuity conductor and multiple 2-inch-diameter conduits would also be included to house the communication fibers. The dimensions of the duct banks would be approximately 6 feet wide and 2.5 feet high.

Once the duct banks are installed, engineered backfill would be imported, placed, and compacted. Each duct bank would have a minimum of 36 inches of cover. While the completed trench sections are being backfilled, additional trench line would be opened farther down the alignment. This process would continue until the entire duct bank is in place.

3.5.6.3 Cable Pulling, Splicing, and Termination

After installation of the conduit, cables would be installed in the duct banks. Each cable segment would be pulled into the duct bank, spliced at each of the vaults along the route (if applicable), and terminated at the transition where the lines convert to overhead. To pull the cable through the ducts, a cable reel would be placed at one end of the section and a pulling rig would be placed at the other end. A large rope would then be pulled into the duct using a fish line and attached to the cable pulling eyes. The cable pulling eyes would then be attached to the conductor, and the cable would then be pulled through the duct. A lubricant would be applied to the cable as it enters the duct to decrease friction during pulling. A similar process would also be used to pull the associated communication cables into the duct banks.

3.5.6.4 Trenchless Techniques

3.5.6.4.1 Hydroplow

The submarine cables would be buried 6 to 15 feet below the sediment surface, or as specified by engineering and/or permitting agency requirements, to protect them from mechanical damage. Cables would be installed by using a hydroplow that is pulled along the seabed behind a barge. The hydroplow would consist of a water jet and a long blade mounted to either a sled- or track-mounted submerged vehicle. The blade would contain water nozzles on the leading edge that mobilize the sediment using high-pressure water. The submarine cable would be fed from the barge down to the seabed through the blade and would exit at the foot of the blade to be laid directly into the river bottom sediments. The length and angle of the blade would determine the burial depth of the cable. As the blade moves forward and the cable is placed in the momentarily opened trench, the majority of the fluidized sediments behind the blade would fall back into the trench, effectively burying the cable. This cable-laying method causes considerably less environmental disturbance than traditional mechanical trenching methods. In areas where operation of the hydroplow would be difficult, divers may manually guide the water jet to open a furrow and directly bury the cable. Divers would follow all applicable safety protocols outlined in the construction contractor's safety plan. Divers would not require additional boats to access the hydroplow. All vessel traffic supporting the proposed LSPGS 230 kV Submarine Segment installation would be coordinated with the USCG, Vessel Traffic Service, the Harbor Master, and other applicable agencies as part of the permitting process for the Proposed Project. This

coordination would also occur prior to any anchoring or stationary positioning of barges or other vessels during periods of inactivity.

The installation of each submarine cable would take between 20 and 25 days and would include between 7 and 10 days of 24-hour continuous cable-laying work within the Delta. Once the hydroplow initiates the cable installation process, it would not stop until the cable has been completely installed. Pulling each cable into the transition vault near PG&E's existing Pittsburg Substation would take an additional 3 to 5 days. Tying each cable off at the in-river transition structure would take an additional 2 to 4 days. An additional 2 to 7 days would be required to test the cable and tow the equipment back to the landing site to prepare for the next cable installation process. Lastly, 12 to 15 days would be required to reload the barge with the next cable, representing the anticipated periods of inactivity along the submarine cable route during the cable installation process. While the barge is being reloaded, work may continue at the in-river transition structure or near the shoreline in Pittsburg.

As shown on Figure 3-1: Project Overview Map, the U.S. Army Corps of Engineers (USACE) maintains two navigational channels crossed by the proposed LSPGC 230 kV Submarine Segment—the San Joaquin Ship Channel and the Sacramento Deep Water Ship Channel. These channels are maintained at a depth of 30 and 35 feet, respectively. The existing channel depth in these locations ranges between 35 and 90 feet. Because the cables would typically be buried 6 to 15 feet below the existing sediment surface, they would be below any planned dredging within these channels. In addition and as described in Section 5.12 Mineral Resources, the proposed LSPGC 230 kV Submarine Segment cables would cross Lind Marine, Martin Marietta Marine Operations, LLC, and Suisan Associates (Lind Marine's) active dredging operation in Suisun Bay. Lind Marine conducts sand mining operations through intentional dredging of sand and fine to medium gravel to be later used and sold for commercial purposes. LSPGC has designed the submarine cable to minimize the crossing length within Lind Marine's operations and would obtain a lease agreement and a lease encumbrance permit/agreement from the California State Lands Commission (CSLC) for encumbering on the existing mining lease. With these agreements in place, Lind Marine's activities in the vicinity of the cables would be prohibited, protecting them from incidental impacts. Lastly, as described in APM GEN-1, LSPGC would prepare a scour analysis to assist with designing the cable routes and ensuring they are buried to suitable depths.

3.5.6.4.2 Horizontal Directional Drilling

HDD is a boring technique that would be used to install the proposed LSPGC Telecommunications Line. HDD involves drilling along a horizontal arc that would pass beneath the resource or infrastructure to be avoided. The HDD technology uses a hydraulically powered horizontal drilling rig supported by a drilling mud tank and a power unit for the hydraulic pumps and mud pumps. A variable-angle drilling unit would initially be adjusted to the proper design angle for the drill. The first step would be to drill a pilot hole. The first and smallest of the cutting heads would begin the pilot hole at the surveyed entry point in the entry pit. Once the pilot hole is completed, a succession of larger cutting heads and reamers would be pulled and pushed through the bore hole until it is the appropriate size for the cable. Once the drill hole reaches the correct diameter, a pulling head would be attached on the end of the cable section, and the cable would be pulled through the drill hole until it surfaces on the other side. The

completed, drilled crossing would then be connected, as appropriate, and the entry and exit pits would be backfilled.

3.5.6.5 Drilling Muds and Fluids

Drill lubrication containing water, bentonite clay, and additives (referred to as "drilling mud") would be used to aid the drilling, coat the walls of the bore hole, and maintain the opening. During the bore, drilling fluid would be pumped under high pressure through the drill stem to the rotating cutting head and would return the soil cuttings to a pit at the surface entry point. No additives that are considered hazardous, according to federal and state laws, would be used during the HDD process. The drilling fluid would be filtered/cleaned, conditioned, and reused to the extent feasible. Excess drilling mud is anticipated to be hauled off site after construction for disposal at an approved facility. If a frac-out occurs, the boring operation would be assessed to determine whether the bentonite needs to be contained.

3.5.7 Substation, Switching Stations, Gas Compressor Stations

3.5.7.1 Substation Installation

Construction of the proposed LSPGC Collinsville Substation would begin with site preparation and grading of the site, followed by installation of foundations and underground equipment, and then installation and testing of electrical equipment. Prior to clearing and grubbing, all necessary surveys, marking, and installation of storm water management features (e.g., silt fence and fiber rolls) would be completed. In addition, fencing driveways and gates would be installed (some on a temporary basis) to provide site security during construction activities. Following construction, temporary disturbance areas would typically be recontoured to match pre-construction grades.

Following site preparation and grading, all necessary below-grade construction (including structure and equipment foundations, underground ducts, ground grid, and construction of the control enclosure) would begin. Once all earthwork and below-grade work are completed, major equipment and structures would be installed and anchored to their respective foundations. It is anticipated that all major electrical and substation equipment (e.g., power transformers, reactors, power circuit breakers, control enclosure, and reactors) would be delivered to the substation footprint and placed directly on the previously constructed foundations. Other substation equipment (e.g., air disconnect switches, instrument transformers, transmission structures, insulators, conductors, rigid bus, connectors, conduit, cable trench, and rebar) would be received and temporarily stored at the staging area prior to installation. Transmission interconnection line terminations and distribution connections would be completed inside the proposed LSPGC Collinsville Substation facility following final installation of the substation structures and equipment.

As described in Section 3.5.1.2 New Access Roads, the proposed LSPGC Collinsville Substation would be accessed using a new driveway extending from Stratton Lane. The gravel driveway would be approximately 20 feet wide and 125 feet long. PG&E would access control equipment within the substation perimeter using a new approximately 336-foot-long and 20-foot-wide access road that would be installed on the east side of the substation. The substation internal access roads would be paved and maintained for safe access for substation O&M activities.

The proposed LSPGC Collinsville Substation would be surrounded by an approximately 10-foot-tall, prefabricated interlocking security wall. The prefabricated interlocking security wall would be consistent with North American Electric Reliability Corporation (NERC) Critical Infrastructure Protection (CIP) guideline 14 and would include approximately 1 foot of barbed wire atop the wall. One approximately 16-foot-wide gate would be placed at the main entrance to the substation.

The substation would include a SCADA system that would consist of fully redundant servers, power supplies, and Ethernet LAN and WAN connections, routers, firewalls, and switches.

3.5.7.2 Civil Works

Civil work at the proposed LSPGC Collinsville Substation site would include grading and the installation of a stormwater detention basin. The graded area would be used for the construction of the substation, as well as staging, spoil or import storage, drainage, and the substation driveway and parking areas. Prior to grading, the substation site would be cleared of all vegetation. The proposed slope of the substation would be approximately 1 percent from north to south, toward the stormwater detention basin. Final elevation profiles, and resulting storm water flow directions, have not been engineered and would be developed during the detailed engineering phase of the Proposed Project. Initial grading contours have been included in the geographic information system data that has been submitted under separate cover.

A proposed stormwater detention basin at the southern boundary of the proposed LSPGC Collinsville Substation has been included in the preliminary design, as depicted in Attachment 3-A: Detailed Route Map. Because the proposed LSPGC Collinsville Substation would be located in Solano County, it would need to comply with the Bay Area Stormwater Management Agencies Associates (BASMAA) and the National Pollutant Discharge Elimination System (NPDES) Municipal Stormwater Permit (Provisions E.12) as follows:

- All regulated projects (i.e., projects that create or replace 5,000 square feet or more of impervious surface) are required to implement stormwater detention basins for low-impact development standards.

- Storm water capture is determined using the formula and volume capture coefficients in Urban Runoff Quality Management, WEF Manual of Practice No.23/ASCE Manual of Practice No.87 (1998), pages 175-178.

The BASMAA Post-Construction Manual recommends preliminarily sizing basin facilities at 4 percent of the tributary's impervious area. The proposed stormwater detention basin would be 4 to 5 percent of the impervious area created by the proposed LSPGC Collinsville Substation components. The basin's current design assumes that the entire 11 acres would be considered impervious during a 2-inch rain event. As a result, the basin would measure approximately 3 feet deep, 75 feet wide, and 355 feet long. In total, approximately 6,700 cubic yards of material would be excavated to prepare for the basin, which would be constructed using an excavator and typical compaction machinery. The stormwater detention basin's design would be refined once geotechnical investigations are complete, which would identify groundwater level ranges in the vicinity of the substation site.

3.5.8 Public Safety and Traffic Control

3.5.8.1 Public Safety

The Proposed Project, which would involve routing construction activities, would pose few public safety considerations. The Proposed Project alignment generally traverses remote and rural areas, and the population density along the Proposed Project alignment is very low and generally non-urbanized.

Public safety considerations during construction could include the following:

- Ramifications from spills of fuels or hazardous materials,
- Work being performed along public roadways and within waterways,
- Movement of construction equipment and materials along public roadways and within waterways,
- Helicopter use,
- Open excavations, and
- Effects from de-energized conductor being dropped during wire stringing.

Measures addressing public safety are discussed further in Chapter 5 – Environmental Impact Assessment.

3.5.8.2 Traffic Control

No trails, paths, or driveways would be impacted by the Proposed Project. Temporary impacts to sidewalks may occur during the construction of the proposed LSPGC Telecommunications Line within the City of Pittsburg. Traffic control procedures may be implemented intermittently along Stratton Lane, Marina Boulevard, Herb White Way, Halsey Way, Halsey Court, and adjacent roadways within the City of Pittsburg during construction and times of deliveries. These restrictions would be temporary, and detours are not anticipated to be necessary. Flaggers or other traffic control measures would be utilized to guide traffic around active work areas in a safe manner. LSPGC would secure encroachment permits as required from Solano County, Contra Costa County, and the City of Pittsburg and implement the corresponding traffic control plans prior to implementing lane closures.

3.5.8.3 Security

The perimeter of the proposed LSPGC Collinsville Substation would have a physical security system that would consist of a prefabricated interlocking security wall that would be 10 feet tall with an additional 1-foot barbed-wire extension at the top. The proposed LSPGC Collinsville Substation physical security would be designed in accordance with NERC CIP requirements with 24-hour monitoring, response, and control through the LSPGC control center and staff. The perimeter security wall would have one gate integrated with electronic access card readers. The proposed LSPGC Collinsville Substation design would include indoor and outdoor physical security cameras placed throughout the site. The security cameras would be routed through a network video recorder located in the WAN control panel and communicated to the LSPGC control center for monitoring.

3.5.8.4 Livestock

The Proposed Project area is not currently under active livestock grazing. As a result, temporary exclusion methods for livestock have not been proposed. The proposed LSPGC Collinsville Substation would include a perimeter physical security system consisting of an approximately 10-foot-tall pre-fabricated interlocking security wall that would preclude livestock from entering the facility. LSPGC does not have current plans to electrify the wall, and livestock grazing may occur in the adjacent lands surrounding the substation.

3.5.9 Dust, Erosion, and Runoff Controls

3.5.9.1 Dust

During construction, migration of dust from the construction sites would be limited by the APMs outlined in Section 5.3 Air Quality. These measures may include the use of water trucks and other dust control measures, including the application of non-toxic soil binders.

3.5.9.2 Erosion

LSPGC would obtain and comply with the Construction Stormwater General Permit Order 2022-0057-DWQ and implement the measures identified in the required SWPPP to effectively control erosion and minimize any associated impacts.

3.5.9.3 Runoff

The proposed LSPGC Collinsville Substation pad would be graded as part of the Proposed Project. The stormwater detention basin would be installed on the southern portion of the proposed LSPGC Collinsville Substation, as depicted in Attachment 3-A: Detailed Route Map, to help facilitate the return of water captured on site to the groundwater basin. The stormwater detention basin would be at or below the substation grade to collect storm water runoff from the substation's graded pad, depending on the final detailed design and in accordance with the BASMAA's Low Impact Development standards, which aim to mimic pre-project site hydrology. All storm water runoff from the Proposed Project would filter through the surrounding soil into the groundwater basin or evaporate.

3.5.10 Water Use and Dewatering

3.5.10.1 Water Use

Water for use during construction would be obtained from one or more sources, including municipal sources or private purveyors. In addition, SMUD operates an existing well, located northeast of the proposed LSPGC Collinsville Substation and across Stratton Lane, that may be suitable for obtaining water. It is estimated that approximately 6 million gallons of water would be needed for dust control, compaction, and concrete work. It is estimated that approximately 5.5 million gallons would be used for the proposed LSPGC Collinsville Substation and approximately 500,000 gallons would be used for the overhead components. Approximately 5 percent of the water required from the Proposed Project may be obtained from wells.

Construction crews would be responsible for providing their own drinking water during construction. The Proposed Project would not require water sources for O&M activities as the proposed LSPGC Collinsville Substation would be unmanned.

3.5.10.2 Dewatering

In instances where groundwater is encountered, excavations would be dewatered using one or more pumps and the water would be either discharged on site to the surface, if permitted, or stored in Baker tanks or similar equipment within staging areas prior to disposal off site. Baker tanks or similar equipment would be emplaced in the temporary work area established for new structure installation. Dewatered water may also be used for dust control. In all cases, water discharges would be conducted in accordance with all applicable federal and state regulations and in a manner that minimizes erosion and avoids impacting surface waters in the vicinity.

3.5.11 Hazardous Materials and Management

3.5.11.1 Hazardous Materials

Hazards and hazardous materials are discussed in greater detail in Section 5.9 Hazards, Hazardous Materials, and Public Safety. Construction of the Proposed Project would require the limited use of hazardous materials (e.g., fuels, lubricants, cleaning solvents, and chemicals). All hazardous materials would be stored, handled, and used in accordance with applicable regulations. Safety Data Sheets (SDS) would be made available at the construction site for all workers. Based on the anticipated volume of hazardous liquid materials (e.g., fuel) that would be stored and dispensed at a staging area, a Spill Prevention, Control, and Countermeasure (SPCC) Plan would be required (in accordance with applicable provisions of Title 40, Parts 112.1 to 112.7 of the CFR). An SPCC Plan, covering the O&M phase of the LSPGC Proposed Project components, would also be prepared and implemented, as applicable.

Although not expected, if pre-existing hazardous waste is encountered on the Proposed Project site, it would be removed and disposed of in a manner consistent with all state and federal regulations. It is not anticipated that pesticides would be used during construction.

3.5.11.2 Hazardous Materials Management

Hazards and hazardous materials are discussed in greater detail in Section 5.9 Hazards, Hazardous Materials, and Public Safety. Prior to construction, an SPCC Plan and HMMP would be prepared, describing hazardous materials use, transport, storage, management, and disposal protocols. Construction would not begin until the SPCC Plan and HMMP are complete. The plans would be prepared in accordance with relevant state and federal guidelines and regulations (e.g., Cal/OSHA). The HMMP would include the following information related to hazardous materials and waste as applicable:

- A list of hazardous materials present on site during construction and O&M to be updated as needed along with product SDS and other information regarding storage, application, transportation, and disposal requirements;
- A Hazardous Materials Communication Plan;
- Assignments and responsibilities of Proposed Project Health and Safety roles;
- Standards for any secondary containment and countermeasures that would be required for hazardous materials; and

- Spill response procedures based on product and quantity.

The procedures would include the materials to be used, location(s) of such materials within the Proposed Project area, and disposal protocols, as well as protocols for the management, testing, reporting, and disposal of potentially contaminated soils or groundwater observed or discovered during construction. This would include termination of work within the area of suspected contamination sampling by an Cal/OSHA-trained individual and testing at a certified laboratory. An HMMP, covering the O&M phase of the LSPGC Proposed Project components, would also be prepared and implemented, as applicable.

3.5.12 Waste Generation and Management

3.5.12.1 Solid Waste

Solid wastes generated during construction would primarily be non-hazardous wastes, including metal, paper, and plastic packaging. Construction debris volumes are estimated at a total of 2,750 cubic yards. Earthwork associated with the Proposed Project would require cut and fill, and a balanced cut-and-fill approach is planned. Should there be any excess fill material after the completion of grading, it would be minimal. If possible, recyclable construction material would be transported to an approved recycling facility. Construction waste that cannot be recycled would ultimately be disposed of at the Potrero Hills Landfill, Recology Hay Road Landfill, Mt. Diablo Recycling Center, or another approved facility. Construction waste would be disposed of properly and in accordance with all applicable federal, state, and local laws regarding solid and hazardous waste that would include, but not be limited to, the California Integrated Waste Management Act of 1989, which set reduction rates for solid waste sent to landfills.

3.5.12.2 Liquid Waste

Liquid waste streams anticipated for the Proposed Project primarily include sanitary waste and storm water runoff. Sanitary waste from self-contained portable toilets would be routinely pumped as needed and would be taken by the vendor to a proper sanitary waste facility for disposal. The sanitary waste that would be generated is estimated at 100 to 150 gallons per week per 10 workers on site. Sanitary waste would be transported by the licensed sanitary waste service providers for off-site disposal at their contracted treatment, storage, and disposal facility.

Storm water runoff would be managed according to a SWPPP prepared to comply with the Construction Stormwater General Permit Order 2022-0057-DWQ and approved by the Central Valley Regional Water Quality Control Board. While contaminated groundwater is not anticipated to be encountered, excavation dewatering effluent may be produced. Dewatering is not planned as part of the in-river transition structure construction. This effluent would be filtered and managed according to the dewatering plan developed as part of the SWPPP.

3.5.12.3 Hazardous Waste

As discussed in Section 3.5.11 Hazardous Materials and Management, Proposed Project construction would require the limited use of hazardous materials (e.g., fuels, lubricants, cleaning solvents, and chemicals). Additionally, the Proposed Project would include transformers containing mineral oil, which is considered a hazardous material in California. Additional potentially hazardous waste sources during construction include contaminated soils,

incidental spill waste, and concrete washout. Waste generated or encountered would be handled, contained, and disposed of according to local, state, and federal regulations. In addition, prior to construction, an HMMP would be prepared describing hazardous materials use, transport, storage, management, and disposal protocols. This could include containerization in California Department of Transportation-approved vessels, review of relevant SDS, use of secondary containment, and/or training of material handlers to ensure worker safety and the reduction of cross-contamination. The location for hazardous waste disposal would be identified in the HMMP.

3.5.13 Fire Prevention and Response

3.5.13.1 Fire Prevention and Response Procedures

The Proposed Project would not be located in an area designated as a high Fire Hazard Severity Zone by the California Department of Forestry and Fire Protection or within a CPUC-designated High Fire Threat District. Tree trimming and vegetation removal would be implemented, as necessary, to prevent fire. Fire response services would be provided by the Montezuma and Contra Costa Fire Protection Districts.

The Proposed Project includes an APM that identifies the need for a Proposed Project-specific Construction Fire Prevention Plan (CFPP) that would address construction fire risks and minimization measures. To fully mitigate any potential fire hazards during construction, a Proposed Project-specific CFPP would be prepared and implemented. The Proposed Project-specific CFPP would be submitted to the CPUC after issuance of the CPCN and prior to requesting the Notice to Proceed.

3.5.13.2 Fire Breaks

During construction activities that are considered “hot work” (e.g., welding, grinding, or any other activity that creates hot sparks), a 10-foot buffer around that activity would be implemented, and vegetation would be cleared to ensure sparks do not create a fire hazard. The proposed workspaces described in Section 3.5.3.1 Construction Work Areas and depicted in Attachment 3-A: Detailed Route Map account for these buffer areas. For activities that do not produce sparks but still have potential to produce a fire hazard, such as ground rod or ground wire installation, a 5-foot buffer would be cleared of vegetation, and additional details (i.e., handling sparks) would be provided in the CFPP.

Under Section 35 of GO 95, the CPUC regulates all aspects of design, construction, and O&M of electrical power lines and fire safety hazards for utilities subject to its jurisdiction (CPUC 2020). In addition, Fire Prevention Standards for Electric Utilities (14 CCR Sections 1250-1258) provide definitions, maps, specifications, and clearance standards for projects under the jurisdiction of PRC Sections 4292 and 4293 in State Responsibility Zones. LSPGC would create a fire break around the proposed LSPGC Collinsville Substation in accordance with all applicable state and federal regulations. The fire break would be achieved by creating an approximately 30-foot vegetation-free buffer zone surrounding the substation’s wall. Gravel would applied for the first 3 feet of the fire break, and the remaining 27 feet would be cleared of vegetation using mechanical methods or state-approved herbicides, as appropriate. In this vegetation-free buffer zone, no vegetation above 3 inches in height would be allowed. Section

3.8.5 Vegetation Management Programs provides a more detailed discussion of vegetation management.

3.6 CONSTRUCTION WORKFORCE, EQUIPMENT, TRAFFIC, AND SCHEDULE

3.6.1 Construction Workforce

Construction of the Proposed Project facilities would occur simultaneously. The peak employment is anticipated to be approximately 160 workers per day, but on average, the workforce on site would be less (approximately 63 workers). Total vehicle round trips during this construction period would be approximately 221 per day, consisting of approximately 33 truck trips (based on substation cut and fill, as well as 188 automobile worker trips). Additionally, workers would commute to the Proposed Project sites from adjacent rural areas and would utilize options, such as vanpools and carpools, to reduce their reliance on single-occupancy vehicles. Any traveling workers that would not return to their homes between workdays would obtain temporary off-site accommodations (e.g., hotels or other short-term rentals in the region) during construction. Hotels and short-term rentals are available in the Proposed Project vicinity, including Suisun City, Fairfield, and Pittsburg. No on-site temporary housing would be constructed.

3.6.2 Construction Equipment

The equipment that would be used to construct each Proposed Project component, along with its approximate duration of use, is provided in Table 3-11: Proposed Construction Equipment and Workforce.

3.6.3 Construction Traffic

Construction vehicles and equipment would typically access the Proposed Project area located in Solano County from Stratton Lane. Access to the Proposed Project area located in Contra Costa County would be provided from the Railroad Avenue exit from State Route 4. Although some disruption to traffic flow may occur when trucks ingress or egress from the Proposed Project would ensure impacts to traffic in the Proposed Project area are minimized during construction.

area, such events would be periodic and temporary. Signage and/or flagmen would be used, as appropriate, to reduce potential disruptions to traffic flow and to maintain public safety during construction.

Worker vehicle parking would occur within the area where LSPGC would acquire land rights for the proposed LSPGC Collinsville Substation, as well as the staging areas identified in Attachment 3-A: Detailed Route Map.

The peak vehicle trips would be from approximately June 2027 through September 2027 during the below-grade and above-grade construction at the proposed LSPGC Collinsville Substation and proposed LSPGC 230 kV Transmission Line construction. Total maximum vehicle round trips during this construction period would be approximately 161 per day, consisting of approximately 26 daily truck trips.

Table 3-11: Proposed Construction Equipment and Workforce

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Survey (05/01/2026 to 06/01/2026 – 26 Working Days – 4 Crew Members)				
Pickup - 1/2 Ton	395	Gas	2	4
LSPGC Collinsville Substation – Site Development (05/01/2026 to 08/01/2026 – 76 Working Days – 12 Crew Members)				
Truck - Water 4,000 Gallons	300	Diesel	4	10
Loader - 4-5 Yards	230	Diesel	2	10
Truck - Dump 10-12 Yards	415	Diesel	5	10
Motor Grader	250	Diesel	2	10
Scraper	410	Diesel	4	10
Vibratory Roller	157	Diesel	2	10
Pickup - 1/2 Ton	395	Gasoline	4	4
Generator – 25 kW	36	Diesel	2	10
Forklift - 15,000 Pounds	130	Diesel	4	6
Pickup - 1 Ton	410	Diesel	4	4
844 Loader	417	Diesel	1	6
Semi Truck	500	Diesel	2	6
LSPGC Collinsville Substation – Below-Grade Construction (07/14/2026 to 01/14/2027 – 152 Working Days – 40 Crew Members)				
Truck - Water 4,000 Gallons	300	Diesel	2	10
Excavator	108	Diesel	2	10
Forklift - 15,000 Reach	130	Diesel	3	8
Backhoe - 2X4	68	Diesel	2	6
Pickup - 1/2 Ton	395	Gasoline	4	2

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Pickup - 1 Ton	410	Diesel	4	2
Excavator - Mini	70	Diesel	1	5
Generator – 25 kW	36	Diesel	1	10
Truck - Concrete	425	Diesel	4	5
Loader - 4-5 Yards	230	Diesel	2	10
Pressure Digger - Lo-Drill (Tracked)	275	Diesel	1	8
Excavator	275	Diesel	1	10
Truck - Dump 10-12 Yards	415	Diesel	3	5
Tool - Van/Conex 20 Feet	0	NA	6	10
Trencher	75	Diesel	2	5
Skid steer loader	74	Diesel	2	10
LSPGC Collinsville Substation – Above-Grade Construction (01/02/2027 to 02/01/2028 – 333 Working Days – 30 Crew Members)				
Wire Trailer/Tensioner	175	Diesel	1	5
Wire Puller	175	Diesel	1	5
Crane - 200 Ton	275	Diesel	1	4
Pickup - 1/2 Ton	395	Gasoline	4	2
Pickup - 1 Ton	410	Diesel	4	2
Welding Truck	395	Diesel	2	2
Generator – 25 kW	36	Diesel	2	10
Crane - 35 Ton (Manlift)	250	Diesel	2	5
Forklift - 10,000 Reach	130	Diesel	2	4
Forklift -15,000 Pounds	130	Diesel	1	4

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Loader - 4-5 Yards	74	Diesel	2	5
120-Foot Manlift	74	Diesel	2	4
PG&E 500 kV Interconnection – Structure Foundation Installation (~~06/01/2027~~ 5/17/2027 to ~~07/28/2027~~ 8/25/2027 – ~~48~~ 70 Working Days – 15 Crew Members)				
Pressure Digger - Lo-Drill (Tracked)	275	Diesel	1	8
Truck - Concrete	425	Diesel	4	5
Pickup - 1 Ton	410	Diesel	4	2
Truck - Water 4,000 Gallons	300	Diesel	2	6
Truck - Dump 10-12 Yards	415	Diesel	2	10
Skid steer loader	74	Diesel	1	10
Forklift - 10,000 Reach	130	Diesel	2	8
Crane - 35 Ton (Manlift)	250	Diesel	1	4
Loader - 4-5 Yards	230	Diesel	1	8
Rough Terrain Crane	185	Diesel	1	2
Motor Grader	250	Diesel	1	10
D6 Type Dozer	250	Diesel	1	10
Excavator	250	Diesel	1	10
Vibratory Roller	125	Diesel	1	10
PG&E 500 kV Interconnection – Structure Installation (07/29/2027 to ~~08/21/2027~~ 9/23/2027 – ~~21~~ 40 Working Days – 15 Crew Members)				
Crane - 35 Ton (Manlift)	250	Diesel	2	10
Helicopter - Heavy Duty	3,200	Jet	1	5
Jet Fuel Truck	300	Diesel	1	10
Pickup - 1/2 ton	395	Gasoline	2	2

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Forklift - 15,000 Pounds	130	Diesel	1	5
Pickup - 1 ton	410	Diesel	2	2
Crane - 200 Ton	275	Diesel	1	10
844 Loader	417	Diesel	1	8
Truck - Water 4,000 Gallons	300	Diesel	2	6
PG&E 500 kV Interconnection – Conductor Installation (9/24/2027 - 2/29/2028 ~~08/22/2027 to 09/15/2027 – 20~~ 106 Working Days – 30 Crew Members)				
Helicopter – Light Duty	700	Jet	1	10
Jet Fuel Truck	300	Diesel	1	10
Crane - 35 Ton (Manlift)	250	Diesel	6	10
Pickup - 1/2 ton	395	Gasoline	4	2
Pickup - 1 Ton	410	Diesel	4	2
D8 Sag Dozer	200	Diesel	3	10
Wire Puller	175	Diesel	1	5
Truck - Water 4,000 Gallons	300	Diesel	2	6
Wire Trailer/Tensioner	175	Diesel	1	5
LSPGC 230 kV Overhead Segment – Access Road Construction (05/01/2026 to 05/19/2026 – 16 Working Days – 12 Crew Members)				
Pickup - 1/2 ton	395	Gasoline	2	4
Pickup - 1 ton	410	Diesel	2	4
Motor Grader	250	Diesel	1	10
Truck - Dump 10-12 Yards	415	Diesel	2	10
Skid steer loader	74	Diesel	1	10
Truck - Water 4,000 Gallons	300	Diesel	2	6

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
D6 Type Dozer	250	Diesel	1	10
Excavator	2 50	Diesel	1	10
LSPGC 230 kV Overhead Segment – Structure Foundation Installation (05/20/2027 to 06/15/2027 – 22 Working Days – 12 Crew Members)				
Pressure Digger - Lo-Drill (Tracked)	275	Diesel	1	8
Truck - Concrete	425	Diesel	4	5
Pickup - 1 Ton	410	Diesel	4	2
Truck - Water 4,000 Gallons	300	Diesel	2	6
Truck - Dump 10-12 Yards	415	Diesel	2	10
Skid steer loader	74	Diesel	1	10
Forklift - 10,000 Reach	130	Diesel	2	8
Crane - 35 Ton (Manlift)	250	Diesel	1	4
844 Loader	417	Diesel	1	8
Rough Terrain Crane	185	Diesel	1	2
LSPGC 230 kV Overhead Segment – Structure Installation (06/16/2027 to 07/15/2027 – 24 Working Days – 12 Crew Members)				
Crane - 35 Ton (Manlift)	250	Diesel	2	10
Pickup - 1/2 ton	395	Gasoline	2	2
Forklift - 15,000 Pounds	130	Diesel	1	5
Pickup - 1 Ton	410	Diesel	2	2
Crane - 200 Ton	275	Diesel	1	10
844 Loader	417	Diesel	1	8
Truck - Water 4,000 Gallons	300	Diesel	2	6

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
LSPGC 230 kV Overhead Segment – Conductor Installation (07/16/2027 to 08/15/2027 – 26 Working Days – 30 Crew Members)				
Helicopter – Light Duty	700	Jet	1	10
Jet Fuel Truck	300	Diesel	1	10
Crane - 35 Ton (Manlift)	250	Diesel	6	10
Pickup - 1/2 ton	395	Gasoline	4	2
Pickup - 1 Ton	410	Diesel	4	2
D8 Sag Dozer	200	Diesel	3	10
Wire Puller	175	Diesel	1	5
Truck - Water 4,000 Gallons	300	Diesel	2	6
Wire Trailer/Tensioner	175	Diesel	1	5
Deck Barge	N/A	NA	1	2
Tug Boat	3300	Diesel	2	6
Support Vessel	200	Diesel	2	4
Deck Generator	170	Diesel	1	8
Anchor Winches	100	Diesel	4	4
LSPGC 230 kV Submarine Segment – Transition Structure Foundation Installation (06/15/2026 to 12/15/2026 – 150 Working Days – 20 Crew Members) [7]				
Spud Barge	N/A	Diesel	1	4
Hydraulic Unit	100	Diesel	1	2
Tug Boat	3300	Diesel	2	6

[7] The anticipated in-river work window would be between July 1 and November 30. Work outside this window would involve mobilization or demobilization and would not involve activities that would disturb the Delta substrate. As a result, work within this window would be consistent with the anticipated in-river work window.

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Deck Winch	225	Diesel	1	2
Truck - Concrete	425	Diesel	1	10
Concrete Pump	350	Diesel	1	3
Generator – 725 kW	985	Diesel	1	8
Deck Generator – 100 kW	130	Diesel	1	8
Support Vessel	200	Diesel	1	6
Air Compressor	50	Diesel	1	8
Vibratory Hammer/Pile Driver[8]	665	Diesel	1	8
Crane	180	Diesel	1	8
Engine Welder	25	Diesel	1	4
Support Vessel	200	Diesel	2	4
LSPGC 230 kV Submarine Segment – Transition Structure Installation (06/15/2027 to 07/15/2027 – 25 Working Days – 20 Crew Members)[7]				
Spud Barge	N/A	Diesel	1	4
Deck Barge	N/A	NA	1	2
Tug Boat	3300	Diesel	2	6
Barge Mounted Crane	250	Diesel	1	8
Support Vessel	200	Diesel	2	4
Deck Generator	170	Diesel	1	8
Air Compressor	50	Diesel	1	8

[8] A vibratory hammer and/or pile driver would be required for the installation of the in-river transition structure. Because both pieces of equipment would not be operated simultaneously, they have been combined in this table. The analysis presented in Chapter 5 – Environmental Impact Assessment assumes the worst case between the two pieces of equipment.

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Generator – 725 kW	985	Diesel	1	8
LSPGC 230 kV Submarine Segment – Submarine Cable Installation (06/20/2027 to 12/15/2027 – 147 Working Days – 25 Crew Members)[7]				
Survey Vessel	150	Diesel	2	12
Tug Boat	1200	Diesel	2	8
Crew Boat	1200	Diesel	1	12
Small Boats	250	Gasoline	2	12
Crane	180	Diesel	1	6
Anchor Winches	100	Diesel	4	4
Generators	150	Diesel	1	12
Misc. Deck Equipment	100	Diesel	1	12
Water Pumps	325	Diesel	2	12
Pull In Winch	100	Diesel	1	12
Dive Compressor	50	Diesel	2	12
Termination Genset	50	Diesel	1	12
Assist Barge: Crane	200	Diesel	1	12
LSPGC 230 kV Underground Segment – Southern Transition Approach Construction (06/15/2027 to 11/30/2027 – 138 Working Days – 25 Crew Members)[7]				
Onshore Excavator	600	Diesel	1	12
Onshore End Loader	250	Diesel	1	12
Onshore Crane	180	Diesel	1	12
Crane - 200 ton	275	Diesel	1	6
Onshore Vibratory Hammer	300	Diesel	1	12
Air Compressor	50	Diesel	1	12

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Truck - Dump 10-12 Yards	415	Diesel	4	6
Onshore Dewatering Equipment	50	Diesel	2	12
Onshore Trucks	300	Diesel	4	12
LSPGC 230 kV Underground Segment – Substation Getaways (06/01/2027 to 08/23/2027 – 70 Working Days – 20 Crew Members)				
Pickup - 1/2 Ton	395	Gasoline	4	2
Pickup - 1 Ton	410	Diesel	4	2
Welding Truck	395	Diesel	2	2
Generator – 25 kW	36	Diesel	2	10
Crane - 35 Ton (Manlift)	250	Diesel	2	5
Forklift - 10,000 Reach	130	Diesel	2	4
Forklift -15,000 Pounds	130	Diesel	1	4
Loader - 4-5 Yards	74	Diesel	2	5
Wire Trailer/ Tensioner	175	Diesel	1	5
Wire Puller	175	Diesel	1	5
Skid steer loader	74	Diesel	2	10
Backhoe - 2X4	68	Diesel	2	6
PG&E 12 kV Distribution Line (06/01/2026 to 08/01/2026 – 51 Working Days – 10 Crew Members)				
Pickup - 1/2 ton	395	Gasoline	2	2
Wire Trailer/Tensioner	175	Diesel	1	5
Wire Puller	175	Diesel	1	5
Crane - 35 Ton (Manlift)	250	Diesel	2	10
Pickup - 1 Ton	410	Diesel	2	2

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Forklift - 15,000 Reach	130	Diesel	2	6
Pressure Digger - Lo-Drill (Tracked)	275	Diesel	1	8
Truck - Dump 10-12 Yards	415	Diesel	2	10
Skid steer loader	74	Diesel	2	10
Truck - Concrete	425	Diesel	4	5
Backhoe - 2X4	68	Diesel	1	8
LSPGC Telecommunications Line (06/01/2027 to 10/01/2027 – 103 Working Days – 12 Crew Members)				
Crane - 35 Ton (Manlift)	250	Diesel	2	10
Forklift - 10,000 Reach	130	Diesel	1	5
Excavator - Mini	70	Diesel	2	5
Truck - Dump 10-12 Yards	415	Diesel	3	5
Skid steer loader	74	Diesel	2	10
Trencher	75	Diesel	1	10
Pickup - 1 Ton	410	Diesel	3	2
Truck - Concrete	425	Diesel	2	5
Wire Trailer/ Tensioner	175	Diesel	1	5
Wire Puller	175	Diesel	1	5
PG&E Substation Modifications (~~06/01/2026~~ 5/3/27 to 5/1/28 ~~10/01/2026~~) – ~~102~~ 250 Working Days – 15 Crew Members)				
Pickup - 1/2 Ton	395	Gasoline	4	2
Pickup - 1 Ton	410	Diesel	4	2
Welding Truck	395	Diesel	2	5
Crane - 35 Ton (Manlift)	250	Diesel	2	10

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Forklift -15,000 Pounds	130	Diesel	1	4
Manlift – 40 Feet	49	Diesel	3	10
120-Foot Manlift	74	Diesel	2	4
Testing and Commissioning (11/01/2027 to 06/01/2028 – 174 Working Days – 24 Crew Members)				
Pickup - 1/2 Ton	395	Gasoline	4	2
Pickup - 1 Ton	410	Diesel	4	2
Manlift – 40 Feet	49	Diesel	3	10
Truck - Water 4,000 Gallons	300	Diesel	1	10
Tool - Van/Conex 20 Feet	0	NA	6	10
Deck Barge	N/A	NA	1	2
Tug Boat	3300	Diesel	2	6
Support Vessel	200	Diesel	2	4
Deck Generator	170	Diesel	1	8
Crane - 35 Ton (Manlift)	250	Diesel	2	10
Site and ROW Restoration (02/01/2028 to 07/17/2028 – 140 Working Days – 12 Crew Members)				
Pickup - 1 Ton	410	Diesel	4	2
Motor Grader	250	Diesel	2	10
Backhoe - 2X4	68	Diesel	2	8
Truck - Water 4,000 Gallons	300	Diesel	2	10
Skid steer loader	74	Diesel	1	10
Excavator	250	Diesel	1	10
D6 Type Dozer	250	Diesel	1	10

Equipment Name	Anticipated Engine Output (horsepower)	Anticipated Fuel Type	Approximate Quantity	Approximate Daily Use (hours)
Pickup - 1/2 Ton	395	Gasoline	4	2
Truck - Dump 10-12 Yards	415	Diesel	2	10

Note: Each piece of equipment is conservatively assumed to operate for each day of construction.

Temporary lane closures may be required during construction of the facilities. The temporary closures would be coordinated with Solano and Contra Costa counties, the City of Pittsburg, and emergency service providers through the encroachment permit process; and one or more traffic control plans would be implemented as necessary. Implementation of the traffic control plans would ensure impacts to traffic in the Proposed Project area are minimized during construction.

3.6.4 Construction Schedule

Construction is anticipated to begin in early 2026 and would take approximately 24 months to complete. The Proposed Project includes construction occurring on land and in water. The construction of in-water transition structures is anticipated to take approximately 4 months, and installation of the submarine cables is anticipated to take approximately 7 months. In-water work would be restricted to between July 1 and November 30 to protect listed fish species and would require approximately 2 years to complete within the work windows. Land-based construction would occur year-round or as authorized by permits and authorizations. Per the CAISO technical specifications, the Proposed Project is required to be energized by June 1, 2028. The complete construction schedule, outlined by task, is summarized in Table 3-12: Proposed Construction Schedule.

Table 3-12: Proposed Construction Schedule

Construction Phase	Start Date	End Date	Approximate Number of Active Workdays*
Survey	May 2026	June 2026	26
LSPGC Collinsville Substation	May 2026	February 2028	561
PG&E 500 kV Interconnection**	~~June 2027~~ May 2027	~~September 2027~~ February 2028	~~89~~ 196
LSPGC 230 kV Overhead Segment	May 2027	August 2027	72
LSPGC 230 kV In-River Transition Structure	June 2026	July 2027	175
LSPGC 230 kV Submarine Segment	June 2027	December 2027	147
LSPGC 230 kV Underground Segment	June 2027	November 2027	138
PG&E Substation Modifications**	~~June 2026~~ May 2027	~~October 2026~~ May 2028	~~102~~ 250
PG&E 12 kV Distribution Line**	June 2026	August 2026	51
LSPGC Telecommunications Line	June 2027	October 2027	103
Testing and Commissioning**	November 2027	June 2028	174
Site and ROW Restoration	February 2028	July 2028	140

Notes:
* Active workdays exclude all Sundays and federal holidays between the start and end date for each construction phase.
** Indicates PG&E work activities that are included in the overall construction schedule as tentative because LSPGC is not responsible for that work.
**Testing and commissioning duration also Includes PG&E's construction and testing activities to connect Collinsville substation

3.6.5 Work Schedule

Terrestrial construction activities on the Proposed Project would generally be scheduled to occur during daylight hours of 7:00 a.m. to 7:00 p.m., 6 days per week (Monday through Saturday). Construction is not anticipated on federal holidays. Night work is not anticipated to be necessary, but could be required in limited circumstances, such as clearance restrictions. Terrestrial construction activities could infrequently be scheduled outside of these hours to avoid or reduce schedule delays, complete construction activities (e.g., continuous concrete pours), accommodate the schedule for system outages, or address emergencies. Construction of the proposed 230 kV Submarine Segment would typically occur 24 hours per day, 7 days per week until complete. While work would occur on an almost continuous basis at the proposed LSPGC Collinsville Substation site and along the proposed LSPGC 230 kV Submarine Segment, work at the individual structure locations would be shorter in duration and more periodic in nature.

3.7 POST-CONSTRUCTION

3.7.1 Configuring (Commissioning) and Testing

Configuring and testing would begin with pre-commissioning activities that include equipment fit-up inspections and simple electrical tests to ensure the equipment is connected properly. After pre-commissioning, the first commissioning activities would include transformer energization followed by auxiliary electrical tests. Lastly, the power electronic devices and protection/control system would be tested and programmed per the Proposed Project requirements. After this, the Proposed Project would be ready for energization.

Configuring and testing would require the use of pickup trucks, forklifts, and manlifts and would require approximately 24 construction personnel to be on site. Configuring and testing the Proposed Project would take approximately 7 months between November 2027 and June 2028 for a total duration of approximately 174 days, at which point the Proposed Project would be fully functional and ready for commercial operation.

3.7.2 Landscaping

The proposed LSPGC Collinsville Substation is located within a grazing area, approximately 1.5 miles from PG&E's existing 500 kV transmission lines, with the closest residence located approximately 3,600 feet from the facility. Therefore, LSPGC is not proposing any landscaping at the proposed LSPGC Collinsville Substation.

3.7.3 Demobilization and Site Restoration

3.7.3.1 Demobilization

Following construction, the process of demobilization would begin. First, all equipment not needed for the remaining testing and revegetation would be removed. Next, all temporarily disturbed work areas would be restored to their pre-construction conditions.

3.7.3.2 Site Restoration

All areas temporarily disturbed by Proposed Project activities would be restored to approximate pre-construction conditions or as otherwise provided by new or existing easements. All areas would be carefully assessed to be sure all residual construction debris and waste are removed and

transported off site to an approved disposal facility. Any types of Proposed Project waste materials that are routinely recycled would be recycled in an appropriate fashion at an approved disposal facility. LSPGC and PG&E would conduct a final inspection to ensure that cleanup activities are successfully completed as required. Areas that are disturbed by grading, auguring, or equipment movement would be restored to their original contours and drainage patterns unless otherwise directed by the applicable landowner. Work areas would be decompacted, and salvaged topsoil materials would be respread following recontouring to aid in restoration of temporarily disturbed areas. Revegetation activities would be conducted in accordance with the Proposed Project SWPPP and APMs recommended herein. Restoration could include recontouring, reseeding, and planting replacement vegetation, as appropriate. Additional restoration opportunities could include preparing the site for future utility uses. Erosion control measures may be required and would also be implemented in accordance with the Proposed Project SWPPP and APMs. Gravel placed to facilitate construction may be left in place if requested by applicable landowners.

3.8 OPERATION AND MAINTENANCE

The Proposed Project would be operated and maintained to meet all GO 95 requirements, including minimum vegetation and equipment clearances, in addition to the vegetation clearance requirements in California PRC Section 4292 and Title 14, Section 1254 of the California CCR.

3.8.1 Regulations and Standards

O&M of the Proposed Project would be conducted in accordance with all applicable Federal Energy Regulatory Commission, NERC, CPUC, or CAISO requirements. Any O&M work (e.g., high-voltage capital repair or replacement) would also be conducted in accordance with NESC, National Electrical Code, Cal/OSHA and other applicable regulations and standards. Both LSPGC and PG&E have Wildfire Management Plans, which are provided in Attachment 3-B: Wildfire Mitigation Plans.

3.8.2 System Controls and Operation Staff

3.8.2.1 LSPGC Facilities

The Proposed Project would be unmanned during O&M. The proposed LSPGC Collinsville Substation would be operated by LSPGC's 24-hour control center in Austin, Texas. Day-to-day management of the substation would be conducted by LSPGC's asset management teams based in Texas and Missouri. The substation would also be monitored by CAISO's control center in Folsom, California, and CAISO would have operational control of the facility with authority to direct LSPGC's control center.

The Proposed Project facilities would be incorporated into LSPGC's existing programs with existing equipment, experienced staff, and trusted contractors to provide operational and cost efficiencies with reduced risks. LSPGC's local maintenance/technical staff and existing LSPGC staff and outside resources would respond to maintenance issues and emergency situations. LSPGC currently has eight staff in its transmission maintenance group with an average experience of over 15 years. In addition, locally based field employees would support maintenance of the facilities.

3.8.2.2 PG&E Facilities

PG&E's facilities would continue to be unmanned during operations and monitored remotely. The Proposed Project facilities would be incorporated into PG&E's existing programs with existing equipment, experienced staff, and trusted contractors. PG&E's local maintenance/technical staff and outside resources would respond to maintenance issues and emergency situations.

3.8.3 Inspection Programs for Substations

LSPGC would regularly inspect, maintain, and repair the Proposed Project substation facilities and access roads following completion of Proposed Project construction. PG&E would continue its regular inspections at its existing substations. Typical O&M activities would involve routine inspections and preventive maintenance to ensure service reliability, as well as emergency work to maintain or restore service. In general, monthly or quarterly inspections would be performed on the proposed LSPGC Collinsville Substation, as well as PG&E's existing substations to inspect each required piece of equipment in accordance with manufacturer recommendations. These inspections would be performed without taking the substation out of service. LSPGC and PG&E would normally perform routine ground inspections of substation facilities monthly using the access roads that were constructed for this purpose.

3.8.4 Maintenance Programs

3.8.4.1 LSPGC Facilities

3.8.4.1.1 Proposed LSPGC Collinsville Substation

It is anticipated that equipment located at the proposed LSPGC Collinsville Substation facility would be taken out of service periodically to perform more extensive checks and maintenance on the main components of the facility. Due to the diversity of equipment and the individual system components, a small, specialized team would be utilized to perform more extensive maintenance activities.

3.8.4.1.2 Proposed LSPGC 230 kV Transmission Line

Routine maintenance of the overhead and underground segments of the proposed LSPGC 230 kV Transmission Line is expected to require approximately one trip per year by crews composed of one to four people. Annual comprehensive checks and maintenance would be performed by LSPGC maintenance personnel or qualified contractors. Should structures require direct access during maintenance, overland access consistent with easement access rights and in coordination with the landowner would be utilized. The proposed LSPGC 230 kV Submarine Segment is not anticipated to require any regular maintenance. Should any portion of the cable become defective, a replacement segment of cable would be spliced to repair it and the defective portion would be abandoned in place. Any required submarine cable or cable segment replacement would involve similar methods and impacts as those associated with initial construction.

3.8.4.2 Proposed PG&E Facilities

The proposed PG&E 500 kV Interconnection would be inspected annually by PG&E routine patrols, either from the ground or by a drone/helicopter. The inspection process would involve

routine patrols from existing local staff, either on the ground or by helicopter, tasked with patrolling the transmission lines. Normal inspection and patrols would typically be completed in a pickup truck and/or an off-road utility vehicle. While not expected, if vehicle access is not available, an inspector would complete portions of the inspection on foot. Climbing inspections would be performed on an as-needed basis, based on specific identified conditions, and in compliance with CAISO guidelines and regulations.

3.8.5 Vegetation Management Programs

In accordance with fire break clearance requirements in GO 95, PRC Section 4292 and Title 14, Section 1254 of the CCR, LSPGC and PG&E would trim or remove flammable vegetation in the area surrounding the Proposed Project and all other safety hazards. Proposed Project-specific vegetation clearances would be determined by the CPUC. One-person crews typically conduct this work using mechanical equipment consisting of weed trimmers, rakes, shovels, and leaf blowers. State-approved herbicides would also be applied to treat bare-ground areas, as needed, during O&M activities. Pesticides would not be used during O&M activities. The proposed LSPGC 230 kV Transmission Line and Collinsville Substation would be inspected on an annual basis to determine if vegetation trimming or clearing is required. LSPGC and PG&E vegetation management activities would ensure a continuous defensible area around the substation and within transmission line ROW.

3.9 DECOMMISSIONING

Prior to removal or abandonment of any facilities, LSPGC would prepare a removal and restoration plan. The removal and restoration plan would address the removal of the proposed LSPGC Collinsville Substation and proposed LSPGC 230 kV Transmission Line from the permitted area; any requirements for restoration and revegetation; and the potential preparation of the property for future utility uses. The removal and restoration plan would then be approved by the CPUC prior to implementation. PG&E is not subject to decommissioning and would retain its facilities as long as they are useful.

3.10 ANTICIPATED PERMITS AND APPROVALS

3.10.1 Anticipated Permits and Approvals

The CPUC is the lead California agency for this Proposed Project. LSPGC would comply with CPUC GO 131-D Section III-B, which contains the permitting requirements for construction of the Proposed Project (CPUC 1995). This Proponent's Environmental Assessment was prepared as part of an application to obtain a CPCN for the Proposed Project. Although PG&E is not an applicant in LS Power's application for a CPCN, PG&E's scope of work is needed to interconnect the Proposed Project to PG&E's electrical grid. PG&E's substation modification and transmission line extension would be included in the CPUC's CEQA analysis. However, PG&E would likely utilize the adopted CEQA document to separately comply with the CPUC's permitting requirements under GO 131-D.

In addition to the CPCN, LSPGC (and PG&E) may be required to obtain several other permits from federal, state, and local agencies. Table 3-13: Permitting Requirements and Processes lists

the permits, approvals, and licenses that LSPGC anticipates obtaining from jurisdictional agencies to construct the Proposed Project.

Table 3-13: Permitting Requirements and Processes

Agency	District/Office Representative Contact Information	Permit/Approval	Trigger	Status	Date Filed or Planned to be Filed
Federal					
FAA	Obstruction Evaluation Group California – Northern Tameria Burch, Technician tameria.burch@faa.gov (424) 405-7641 Justin Hetland, Specialist justin.hetland@faa.gov (847) 294-8084	Determination of No Hazard	This applies to potential obstruction of air space.	On hold until need for permit is evaluated	May 2025
State Historic Preservation Office	California Office of Historic Preservation Sacramento, CA 95816 info.calshpo@parks.ca.gov Monica Newman, Executive Secretary monica.newman@parks.ca.gov (916) 445-7000	Section 106 Consultation	This applies to ground-disturbing activities in an area with the potential for cultural resources.	On hold until closer to construction	March 2025
National Oceanic and Atmospheric Administration National Marine Fisheries Service – West Coast Region	California Central Valley Office (916) 930-5648 Cathy Marcinkevage, Assistant Regional Administrator cathy.marcinkevage@noaa.gov	Section 7 Consultation	This applies to activities occurring within waters of the U.S. that have the potential to impact species protected by the federal Endangered Species Act (FESA) or Essential Fish Habitat protected under the Magnuson-Stevens Fishery Conservation and Management Act.	On hold until closer to construction	February 2025

Agency	District/Office Representative Contact Information	Permit/Approval	Trigger	Status	Date Filed or Planned to be Filed
U.S. Fish and Wildlife Service (USFWS) – Region 8	San Francisco Bay-Delta Fish and Wildlife Office Tamara N. Ward, Bay-Delta Assistant Field Supervisor for External Affairs tamara_ward@fws.gov	Section 7 Consultation	This applies to activities occurring within critical habitat or with the potential to impact species protected by the FESA.	On hold until closer to construction	February 2025
USACE – Sacramento and San Francisco Districts	San Francisco Regulatory District cespn-pa2@usace.army.mil (415) 503-6958 Sacramento Regulatory District spk-pao@usace.army.mil (916) 557-5100	Section 10 Permit	This applies to construction within navigable waters of the U.S.	On hold until closer to construction	March 2025
		Section 404 Permit	This applies to discharge or placement of fill within waters of the U.S.	On hold until closer to construction	March 2025
		Section 408 Permit	This applies to permanent or temporary alteration or use of a USACE Civil Works project.	On hold until closer to construction	March 2025
State					
California Department of Fish and Wildlife (CDFW) – Bay Delta Region	Bay Delta Region askbdr@wildlife.ca.gov Regulations and Enforcement Information (707) 944-5549	Section 2081 Incidental Take Permit	This applies to potential take of California Endangered Species Act-listed species (Delta smelt and longfin smelt).	On hold until need for permit is evaluated	March 2025
		Section 1600 Lake and Streambed Alteration Agreement	This applies to alteration of a streambed.	On hold until closer to construction	March 2025

Agency	District/Office Representative Contact Information	Permit/Approval	Trigger	Status	Date Filed or Planned to be Filed
CSLC	Land Management Division (916) 574-1940	Lease Agreement	This applies to activities proposed on tidelands and submerged lands owned by the State of California.	On hold until closer to construction	February 2025
		Encumbrance Agreement	This applies to encumbering on an existing CSLC lease agreement.	On hold until closer to construction	February 2025
CPUC	Public Advisor's Office public.advisor@cpuc.ca.gov (415) 703-2074	CPCN	This applies to construction of an electric transmission line designed for operation at 200 kV or higher.	Application in progress	March 2024
		Public Utilities Code Section 851 Authorization	This applies to easements on the proposed LSPGC Manning Substation property between PG&E and LSPGC.	Application in progress	March 2024
San Francisco Bay Conservation and Development Commission	info@bcdc.ca.gov (415) 352-3600	Major Permit	This applies to work that is more extensive than a minor repair or improvement occurring within the Primary Management Area of the Suisun Marsh.	On hold until closer to construction	February 2025
State Water Resources Control Board	San Francisco Bay Region (510) 622-2300 Central Valley Region (916) 464-3291	NPDES Construction General Permit	This applies to construction activities resulting in the disturbance of 1 or more acre of land.	On hold until closer to construction	April 2026
		Section 401 Water Quality Certification	This applies to activities that require a federal authorization, are located in the jurisdiction of more than one Regional Water Quality Control Board, and may result in impacts to waters of the U.S.	Application in progress	March 2025

Agency	District/Office Representative Contact Information	Permit/Approval	Trigger	Status	Date Filed or Planned to be Filed
Local					
Solano County	Public Works pwpermits@solanocounty.com (707) 784-6060	Encroachment Permit	This applies to construction work within the Solano County ROW.	On hold until closer to construction	August 2025
	Public Works Engineering Division Grading@solanocounty.com (707) 784-6765	Grading Permit	This applies to construction activities requiring grading in Solano County.	On hold until closer to construction	August 2025
Contra Costa County	Public Works pw.permits@pw.cccounty.us (925) 313-2000	Encroachment Permit	This applies to construction work within the Contra Costa County ROW.	On hold until closer to construction	August 2025
City of Pittsburg	Engineering Division engfrontdesk@pittsburgca.gov	Encroachment Permit	This applies to construction work within the City of Pittsburg ROW.	On hold until closer to construction	August 2025

3.10.2 Rights-of-Way or Easement Applications

LSPGC would obtain rights for an approximately 32-acre portion of a parcel from an existing private landowner. In addition to the land rights for the substation, the Proposed Project would require new easements for the new transmission lines and interconnections that are outside of existing ROWs.

In addition, PG&E would obtain rights for the minor section of the proposed PG&E 500 kV Interconnection that would extend onto the proposed LSPGC Collinsville Substation property. These new easements to be secured are also summarized in Table 3-14: Permanent New Land and Right-of-Way Requirements.

Table 3-14: Permanent New Land and Right-of-Way Requirements

Proposed Project Component	Approximate Length (miles)	Typical Approximate Width* (feet)	Approximate Area (acres)
LSPGC Collinsville Substation	--	--	32.0
LSPGC 230 kV Overhead Segment	0.9	120	11.6
	< 0.1	230	0.7
LSPGC 230 kV Submarine Segment	4.5	130 to 480	201.8
LSPGC 230 kV Underground Segment	0.3	10	0.4
LSPGC Telecommunications Line	1.2	5	0.7
PG&E 500 kV Interconnection	~~3~~2.5~~0~~	150 to 350	63.6
Distribution Line	0.9	20	2.5

* Note: Typical widths have been provided; however, ROW would vary along each alignment, as appropriate. Final ROW widths would be determined during final engineering.

Because PG&E and LSPGC are subject to the jurisdiction of the CPUC, they must also comply with Public Utilities Code Section 851. Among other things, this code provision requires these utilities to obtain CPUC approval when they convey utility property, including on utility-owned property, to third parties. Obtaining CPUC approval for a Section 851 application requires compliance with the California Environmental Quality Act. LSPGC would file a Section 851 application concurrently with the Proposed Project's CPCN application; PG&E would also seek approval under Section 851 if PG&E conveys utility property rights to a third party.

3.11 APPLICANT-PROPOSED MEASURES

LSPGC would be responsible for overseeing the assembly of construction and environmental teams that would implement and evaluate the Proposed Project APMs. PG&E is not an applicant in this CPCN application proceeding and would not be subject to these APMs. However, PG&E would comply with a separate list of CMs.

LSPGC maintains an environmental compliance management program to allow for implementation of the APMs to be monitored, documented, and enforced during each Proposed Project phase, as appropriate. All those contracted by LSPGC to perform this work would be contractually bound to properly implement the APMs to ensure their effectiveness in reducing potential environmental effects.

Implementation of the proposed APMs would be the responsibility of the environmental compliance team. The team would include an environmental project manager, resource specialists, and environmental monitors. All APMs would be implemented consistent with applicable federal, state, and local regulations. The environmental compliance team would be responsible for the inspection, documentation, and reporting of LSPGC compliance with all APMs as proposed. As needed, environmental specialists would be retained to verify that all APMs are properly implemented during the construction phase.

The APMs are described in Table 3-15: Applicant-Proposed Measures and are described in detail in Chapter 5 – Environmental Impact Assessment, which includes an analysis of why each APM was selected and how it would reduce and/or minimize potential impacts. In addition, all applicable CPUC Draft Environmental Measures were considered and included, as appropriate, as APMs to further reduce potential impacts.

If conditions occur where construction may potentially adversely affect a known or previously unknown environmentally sensitive resource, or if construction activities significantly deviate from Proposed Project requirements, LSPGC monitors and/or contract administrators would have the authority to halt construction activities, if needed, until an alternative method or approach can be identified. Any concerns that arise during implementation of the APMs would be communicated to the appropriate authority to determine if corrective action is required, or the concerns would be addressed on site, as applicable. As the proposed APMs are implemented, environmental monitors would be responsible for the review and documentation of such activities. Field notes and digital photographs would be used to document and describe the status of APMs as necessary.

3.12 PG&E CONSTRUCTION MEASURES

PG&E would comply with the CMs described in Table 3-16: PG&E Construction Measures. PG&E would be responsible for overseeing the assembly of construction and environmental teams that would implement and evaluate the CMs. As discussed throughout the resource impact analyses in Chapter 5 – Environmental Impact Assessment, not all of the CMs listed in Table 3-16: PG&E Construction Measures would be required in order to reduce impacts of the PG&E Proposed Project components to less-than-significant levels.

Table 3-15: Applicant-Proposed Measures

APM Number	Description
AES-1	**Staging Area Maintenance and Restoration.** All Proposed Project sites would be maintained in a clean and orderly state. Temporary nighttime lighting would be directed away from residential areas and have shields to prevent light spillover effects. Upon completion of Proposed Project construction, staging and temporary work areas would be returned to pre-Proposed Project conditions, including regrading of the site and revegetation or repaving of disturbed areas to match pre-existing contours and conditions.
AG-1	**Landowner Coordination.** LSPGC would coordinate with landowners prior to construction and during restoration efforts. Measures to be implemented may include, but are not limited to, the following: • Notice would be provided to landowners outlining construction activities and restoration efforts. • Areas disturbed by construction of the Proposed Project would be restored in accordance with lease agreements, applicable O&M standards, and environmental permit requirements. • In areas containing permanent crops (e.g., grapevines and orchard crops) that must be removed to gain access to pole sites for construction purposes, LSPGC would provide compensation to the farmer and/or landowner in coordination with the landowner.
AIR-1	**Tier 4 Construction Equipment.** Construction equipment with a rating between 100 and 750 horsepower (hp) would be required to use engines compliant with EPA Tier 4 non-road engine standards. In the event that enough Tier 4 equipment is not available, documentation of the unavailability would be provided and engines utilizing a lower standard would be used.
AIR-2	**Dust Control.** Measures to control fugitive dust emissions would be implemented during construction. These measures would be included in a Fugitive Dust Control Plan that would be prepared in accordance with Bay Area Air Quality Management District (BAAQMD) and Sacramento Metropolitan Air Quality Management District requirements. The measures would be implemented as needed to control dust emissions. These measures would include, but may not be limited to, the following: • Surfaces disturbed by construction activities would be covered or treated with a dust suppressant or water until the completion of activities at each site of disturbance. • Inactive, disturbed (e.g., excavated or graded areas) soil and soil piles would be sufficiently watered or sprayed with a soil stabilizer to create a surface crust, or would be covered. • Vehicles hauling soil and other loose material would be covered. • Vehicles would adhere to a speed limit of 15 mph on unpaved access roads without a posted speed limit, Proposed Project-specific construction routes, and within temporary work areas. • Visible mud or dirt trackout onto an adjacent public road would be removed at least once per day using wet power vacuum street sweepers.

APM Number	Description
	• Excavation, grading, and/or demolition activities would be suspended when average wind speeds exceed 20 mph and dust cannot be suppressed in accordance with the requirements of BAAQMD Rule 6-1. • Unpaved dirt roads providing access to sites located 100 feet or farther from a paved road would be treated with a 6- to 12-inch layer of compacted wood chips, mulch, or gravel. • Publicly visible signs would be posted with the telephone number and name of the person to contact at the lead agency regarding dust complaints. This person would respond and take corrective action within 48 hours. The BAAQMD's General Air Pollution Complaints number would also be visible to ensure compliance with applicable regulations.
BIO-1	**Avoid Environmentally Sensitive Areas.** Biological field surveys (i.e., surveys to identify vegetation communities and land cover, aquatic features, and potential terrestrial habitat for special-status plant and wildlife species, as well as fully floristic botanical surveys) would be performed for any portion of the Proposed Project area not yet surveyed (e.g., areas that did not have landowner access, new or modified staging areas, pull sites, or other work areas). Sensitive biological resources or areas discovered during surveys would be subject to a buffer from construction activities in accordance with the applicable Proposed Project APMs. The findings of all biological field surveys on portions of the Proposed Project area not yet surveyed would be provided to the CPUC prior to construction commencing within those areas.
BIO-2	**Develop and Implement Restoration Plan.** A Proposed Project-specific restoration plan would be prepared for the Proposed Project and submitted to the CPUC for approval prior to the start of construction activities. The restoration plan would include procedures for restoration activities, including plant species to be planted, procedures to reduce weed encroachment, and expected timeframes and success criteria for restoration and revegetation. Revegetation activities would be conducted in accordance with the Proposed Project SWPPPs and restoration plan.
BIO-3	**Worker's Environmental Awareness Program (WEAP) Training.** All workers on the Proposed Project site would be required to attend a WEAP training. Training would inform all construction personnel of the resource protection and avoidance measures, as well as procedures to be followed upon the discovery of environmental resources. Additionally, the WEAP would train all construction personnel on hazardous materials management, hazardous wastes and stained or odiferous soils identification, and applicable regulations. The WEAP training would include, at a minimum, the following topics so crews would understand their obligations: • Environmentally sensitive area boundaries, • Housekeeping (i.e., trash and equipment cleaning), • Safety, • Work stoppage, • Communication protocol, and • Consequences of non-compliance.

APM Number	Description
BIO-4	**Delineation of Sensitive Resources.** All sensitive biological areas (e.g., aquatic resources and special-status plants) within Proposed Project work areas would be clearly marked prior to construction to restrict construction activities and equipment from entering these areas. Signage would be placed along regular intervals of this delineation prohibiting entry by Proposed Project personnel and identifying the delineated area as a sensitive resource. A buffer of at least 5 feet from all construction activities would be established around these areas. These buffers would be inspected regularly to ensure that they remain in place.
BIO-5	**Pre-Construction Plant Surveys.** Prior to initial vegetation clearing and ground-disturbing activities, a qualified biologist would conduct pre-construction surveys during the appropriate blooming period for Welsh mudwort, Delta tule pea, Mason's lilaeopsis, Bolander's water hemlock, and Suisun marsh aster. Surveys would occur within Proposed Project work areas with suitable habitat for these plants. In the event of the discovery of a previously unknown special-status plant, the area would be marked as a sensitive area and would be avoided to the maximum extent practicable. If avoidance of species listed under the FESA or CESA is not possible, the USFWS and/or CDFW would be consulted, as appropriate.
BIO-6	**Qualified Biologist Monitoring.** Any construction activities within suitable special-status species habitat that may impact sensitive biological resources would be monitored by a qualified biologist. The monitor/inspector would have the authority to stop work activities upon the discovery of sensitive biological resources and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive resources.
BIO-7	**Vehicle Cleaning.** All construction equipment and vehicles that would travel outside of approved access roads/designated parking areas (e.g., staging yards) would be cleaned prior to their initial arrival on the Proposed Project site to avoid spread of noxious weeds and non-native invasive plant species.
BIO-8	**Vehicle Travel.** Vehicles would adhere to a speed limit of 15 mph on unpaved access roads without a posted speed limit, Proposed Project-specific construction routes, and within temporary work areas. In addition, construction employees would be required to stay on established and clearly marked and existing roads and within the limits of disturbance (except when not feasible due to physical or safety constraints) and would be advised that care should be exercised when commuting to and from the Proposed Project area to reduce accidents and animal road mortality.
BIO-9	**Trapped Animal Prevention.** All excavated holes/trenches that are not filled at the end of a workday would be covered, or a wildlife escape ramp would be installed to prevent the inadvertent entrapment of wildlife species.
BIO-10	**Delineation of Work Areas.** All work areas within the Proposed Project area would be clearly delineated prior to construction commencing with fencing, staking, or flags. Construction activities would be restricted to delineated work areas and all delineation would be maintained in working order until completion of construction.

APM Number	Description
BIO-11	**Pre-Construction Wildlife Surveys.** Prior to initial vegetation clearance and ground-disturbing activities within suitable habitat for special-status wildlife, a biologist would conduct pre-construction surveys within Proposed Project work areas for special-status wildlife. Within wetland habitats or other areas suitable for northwestern pond turtle occupation, a qualified biologist would examine potential basking sites for adult turtles, as well as potential nest sites in sandy or sparsely vegetated substrates; turtle nests would be flagged for avoidance. In pickleweed habitats or other areas suitable for salt marsh harvest mouse occupation, a qualified biologist would carefully inspect vegetation prior to vegetation clearance and ground disturbing activities to ensure no salt marsh harvest mouse individuals or nests are present and to encourage mice residing within or adjacent to the Proposed Project work areas to move into adjacent habitats prior to impacts commencing each day. The monitor/inspector would have the authority to stop work activities upon the discovery of sensitive biological resources and allow construction to proceed after the identification and implementation of steps required to avoid or minimize impacts to sensitive resources.
BIO-12	**Project Lighting.** The use of outdoor lighting during construction would be minimized whenever practicable. Photocell-controlled lighting (i.e., motion detection) would be provided at a level sufficient to provide safe entry and exit to the proposed LSPGC Collinsville Substation and control enclosures. All lighting would be selectively placed, shielded, and directed downward and away from sensitive habitat and resources to the maximum extent practicable.
BIO-13	**Nesting Bird Avoidance.** If feasible, construction and vegetation trimming/removal would be avoided during the migratory bird nesting or breeding season (i.e., February 15 to August 31). When it is not feasible to avoid construction during the nesting or breeding season, a survey would be performed in the area where the work is to occur to determine the presence or absence of nesting birds. If an active nest (i.e., containing eggs or young) is identified, a suitable construction buffer (which would differ based on species and location of nest) would be implemented to ensure that the nesting or breeding activities are not substantially adversely affected. If the nesting or breeding activities are being conducted by a federal or state-listed species, LSPGC and/or PG&E would consult with the USFWS and CDFW as necessary. Monitoring of the nest would continue until the birds fledge or construction is no longer occurring on the site.
BIO-14	**Burrowing Owl.** Prior to the initiation of construction activities occurring in suitable grassland habitat, a qualified biologist would conduct up to four protocol-level surveys for burrowing owl in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). A take avoidance survey for active burrows would also be conducted no more than 30 days prior and no less than 14 days prior to the start of construction in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). If burrowing owls are present at the site, a qualified biologist would establish an exclusion zone in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012). If a qualified biologist experienced with burrowing owls determines the relocation of owls is necessary, a passive relocation effort may be conducted in coordination with the CDFW as appropriate and in accordance with the Staff Report on Burrowing Owl Mitigation (CDFW 2012).

APM Number	Description
BIO-15	**Wetland Birds.** To the greatest extent feasible, work within wetland habitats suitable for California black rail or Ridgway's rail occupation would be limited to a work window of September 1 through January 15, which is outside of the breeding season for these species. If work in suitable wetland habitats is not feasible during this work window, then prior to the initiation of activities, a qualified biologist would conduct protocol-level surveys for Ridgway's rail (USFWS 2015) and standardized tape call-back/response protocols for California black rail following a similar protocol (Hildie et al. 2005). If either species is found to be absent following these surveys, then work may proceed within wetland habitats outside of the prescribed work window.
BIO-16	**Vegetation and Tree Trimming/Removal.** Vegetation and tree trimming/removal would be limited to the minimum area necessary to allow construction to proceed and to provide adequate vegetation removal to meet initial electrical clearance and wildfire prevention requirements. Where feasible, shrubs and other woody vegetation would be cut at the base to preserve the existing root system and facilitate resprouting following the conclusion of Proposed Project construction.
BIO-17	**Raptor Nests.** If a raptor nest or breeding burrow is observed during pre-construction surveys, a qualified biologist would determine if it is active. If the nest is determined to be active, the biological monitor would monitor the nest to ensure that nesting or breeding activities are not substantially adversely affected. If the biological monitor determines that activities associated with the Proposed Project are disturbing or disrupting nesting or breeding activities, the biological monitor would make recommendations to reduce noise or disturbance in the vicinity of the nest, such as temporarily suspending work in the area. If the nest is determined to be inactive, the nest would be removed under direct supervision of the qualified biologist.
BIO-18	**In-Water Work Window.** To minimize potential impacts to fish during in-water work (i.e., disturbance to the Delta substrate or placement of construction materials below the waterline) both from general disturbance or from the potential introduction of deleterious materials that may disrupt both migratory events and cause impacts to species during key times of year when more sensitive life stages (i.e., eggs and fry) are present, a work window of July 1 to November 30 would be enacted.
BIO-19	**In-Water Pile Driving.** The following measures would be implemented during the driving of all piles: • In-water work would be limited to the July 1 to November 30 work window as stated in APM BIO-18. • To the greatest extent feasible, the driving of steel piles would be conducted with a vibratory hammer. • When installation with an impact hammer is required for steel pipe piles driven in water, the following additional measures would be employed: – Use of a soft start (i.e., gradually increasing energy and frequency) at the start of driving, or after a cessation of driving for more than 1 hour. – Use a bubble curtain during the pile driving process. Alternatively, underwater sound monitoring could be performed during pile driving activities for a minimum of 1 day for each pile size and type utilized during construction to verify sound levels would not exceed a peak of 206 decibels (dB) or cumulative sound exposure level of 183 dB as a substitute for a bubble curtain. If monitoring indicates that these noise levels would be exceeded, additional noise reduction measures (e.g., isolation of the piles via a temporary cofferdam or limiting pile strikes) would be implemented to reduce noise levels.

APM Number	Description
BIO-20	**Intake Screening.** To minimize the potential for fish to be entrained by the Proposed Project, any pumps or water intakes used by the Proposed Project would be screened in accordance with the following CDFW and NMFS screening requirements for water diversions within the Delta (CDFG 2000, NMFS 1997). If any variation from these criteria is necessary, the Proponent would consult with the agency responsible for the species for recommendations to protect fish.
BIO-21	**Invasive Species Management for In-Water Work.** To help reduce the potential effects of invasive species from construction of the Proposed Project the following measures would be implemented: • Aquatic vessels brought to the study area from ports outside of San Francisco Bay and/or the Delta for aquatic construction would follow all maritime regulations relating to the exchange of ballast water to prevent the spread of invasive species from outside ports. • Any in-water fill materials (e.g., piles) would be new and not salvaged from areas outside of San Francisco Bay. • Any pumps or in-water equipment that may be needed during construction would be cleaned and dried for at least 72 hours prior to first being used on the Proposed Project. Continual presence on site would not require drying between uses.
BIO-22	**Aquatic Sediment Screening and Testing.** Prior to installation of cables, screening of the cable alignment based on available background resources (e.g., EnviroStor) would be conducted to determine if there have been any known spills or other hazardous materials releases that potentially intersect with the alignment. If any known spills or other hazardous materials releases are discovered, an aquatic sediment screening and testing program would be developed to evaluate the risk of exposing hazardous sediments to the marine environment. The program would entail the following: • Representative aquatic sediment samples would be collected at a minimum of three locations placed evenly along the alignment. The depth of the samples would be consistent with the depth of trenching at each sample location. • Sediment samples would be tested according to methods prescribed in the Guidelines for Implementation of the Inland Testing Manual in San Francisco Bay or updated similar manual approved by the San Francisco Bay Dredge Material Management Office (DMMO) (DMMO 2001). The results of this test would be compared to concentrations allowed for in-bay disposal by the San Francisco Bay DMMO to determine if sediments are clean or require special handling. • Aquatic sediments that exceed San Francisco Bay DMMO testing standards would: – Be avoided by the cable installation route, or – Be removed through dredging and disposed of at an appropriate facility approved by the RWQCB, or – Be controlled via use of a silt curtain or other appropriate BMP approved by the RWQCB. • Cable installation and hydroplow use would be limited to the specified areas and the minimum length necessary.

APM Number	Description
BIO-23	**Aquatic Spill Prevention and Control.** A spill prevention and control plan would be developed and implemented for the Proposed Project throughout all phases of construction. This plan would, at a minimum, include the following parameters to reduce potential effects from spills: • Procedures to ensure any equipment used in water (e.g., hydroplow or excavators) are cleaned of excess lubricants and fuels. • Identification of any hazardous materials used by the Proposed Project. • Storage locations and procedures for such materials. • Spill prevention practices, as well as BMPs, employed for various activities. • Requirements to inspect equipment regularly such that it is maintained to be free of leaks. • Spill kit location, cleanup, and notification procedures.
BIO-24	**Marine Mammals - Pile Driving.** When an impact hammer is necessary to drive piles, a biological monitor would be present to observe for wildlife and would halt pile-driving operations if marine mammals are observed within a distance where they may be affected by sounds created during pile driving.
BIO-25	**Shade Minimization.** Where feasible, the Proposed Project would include the installation of light-transmitting surfaces to minimize shade beneath the in-water transition structure. Materials installed for light transmission should allow for a minimum of 40 percent light transmission to the waters below. If the final design can incorporate a minimum of 25 percent of the surface area using light transmitting surfaces, no additional measures are required as sufficient light would be allowed to reach waters below such that critical habitat would not be shaded in a way that minimizes reductions in habitat productivity. In the event light-transmitting surfaces cannot be installed for safety, structural, or accessibility reasons, the Proposed Project may also install lights beneath the structure to offset light loss within the permanently shaded area. If either of these options are infeasible, the Proposed Project would mitigate for the portion of the structural footprint, which would be permanently shaded. Areas permanently shaded by the overwater structure may be mitigated with one, or a combination of the following means: • Removing equivalent shaded coverage over open water and/or in-water fill at a nearby location, • With the purchase of mitigation credits from an approved mitigation bank at a 1-to-1 ratio (i.e., critical habitat permanently shaded: mitigation habitat), or • By other similar actions approved by regulatory agencies, so long as those alternative actions achieve a similar effect as described previously (e.g., actions which cause ecological uplift of habitat quality).

APM Number	Description
BIO-26	**Overwater Concrete Casting.** The following measure would be implemented during the casting of overwater concrete: • The bottom elevation of the transition structure would be set at an elevation above the 100-year flood level to allow water and debris to flow beneath the structure during the curing process. • All overwater concrete would be poured into water-tight forms, and isolated from waters of the Delta until concrete has fully cured (typically 30 days). • Commercial sealants may be applied to the poured concrete surface where difficulty in excluding water flow for a long period may occur. If sealant is used, water would be excluded from the site until the sealant is dry. • Any water used to keep concrete moist during the curing process would not be allowed to run off of the structure. Concrete forms would also be sufficiently designed to catch and hold any such cure water. • At all times when concrete is being poured or when working with wet concrete, a monitor would be present to inspect the containment structures and ensure that no concrete or cure water escapes the containment structure.
CUL-1	**Worker's Environmental Awareness Program.** In accordance with this measure, the Proposed Project's WEAP would include, at minimum: • Training on how to identify potential cultural resources and human remains during the construction process; • A review of applicable local, state, and federal ordinances, laws, and regulations pertaining to historic preservation; • A discussion of procedures to be followed in the event that unanticipated cultural resources are discovered during implementation of the Proposed Project; • A discussion of disciplinary and other actions that could be taken against persons violating historic preservation laws and policies; and • A statement by the construction company or applicable employer agreeing to abide by the WEAP, and other applicable laws and regulations. The WEAP would be provided to all Proposed Project personnel who may encounter and/or alter historical resources or unique archaeological properties, including construction supervisors and field personnel. No construction worker would be involved in ground-disturbing activities without having participated in the WEAP.
CUL-2	**Avoid Environmentally Sensitive Areas.** Cultural resource surveys would be performed for any portion of the Proposed Project area not yet surveyed (e.g., new or modified staging areas, pull sites, or other work areas). Cultural resources discovered during surveys would be subject to a 50-foot buffer around the boundary of each respective resource and designated as environmentally sensitive areas. Methods of environmentally sensitive area delineation may include, as applicable, flagging, rope, tape, or fencing. The environmentally sensitive areas should be clearly marked on all pertinent construction plans. Where operationally feasible, all NRHP- and CRHR-eligible resources would be protected from direct Proposed Project impacts by Proposed Project redesign (i.e., relocation of the line, ancillary facilities, or temporary facilities or work areas). In addition, all historic properties/historical resources would be avoided by all Proposed Project construction and restoration activities, where feasible. If work within the 50-foot buffer cannot be avoided, then monitoring would be required.

APM Number	Description
CUL-3	**Inadvertent Discoveries.** In the event that previously unidentified cultural resources are uncovered during implementation of the Proposed Project, all work within 50 feet of the discovery would be halted and redirected to another location. A qualified archaeologist(s) would inspect the discovery and determine whether further investigation is required. The qualifications of the archaeologist(s) would be approved by the CPUC and U.S. Army Corps of Engineers (USACE). If the discovery can be avoided and no further impacts would occur, the resource would be documented on California Department of Parks and Recreation cultural resource records, and no further effort would be required. If the resource cannot be avoided and may be subject to further impact, the significance and NRHP and CRHR eligibility of the resource would be evaluated and, in consultation with the CPUC and USACE, appropriate treatment measures would be determined. All work would remain halted until a Secretary of the Interior-qualified archaeologist approves the treatment measures. Preservation in place would be the preferred means to avoid impacts to significant historical resources. Consistent with CEQA Guidelines Section 15126.4(b)(3), if it is demonstrated that resources cannot feasibly be avoided, and if the unearthed resource is prehistoric or Native American in nature, a Native American representative, in consultation with the CPUC and USACE, would develop additional treatment measures, such as data recovery consistent with CEQA Guidelines 15126.4(b)(3)(C-D). Archaeological materials recovered during any investigation would be curated at an accredited curation facility or transferred to the appropriate tribal organization.
CUL-4	**Paleolandform Testing.** Prior to construction, the paleolandform would be evaluated through coring and soil analysis. If this analysis indicates the potential for cultural resources, a Paleolandform Monitoring Plan would be developed, approved by the CPUC, and implemented during submarine cable installation within 500 feet of the potential cultural resources.
GEN-1	**Scour Analysis.** LSPGC would submit a Scour Analysis to the USACE evaluating the appropriate burial depth of the proposed LSPGC 230 kV Submarine Segment's cables. The evaluation would consider the potential scour and dredging activities along the cables' alignment. Following the USACE's review, LSPGC would provide the study to the CPUC for its records.
GEO-1	**Geological Hazards and Disturbance to Soils.** The following measures would be implemented during construction to minimize impacts from geological hazards and disturbance to soils: • Keep vehicles and construction equipment within the limits of the Proposed Project and in approved construction work areas to reduce disturbance to topsoil. • Salvage any disturbed topsoil during temporary grading activities to a maximum depth of 6 inches or to the actual depth if shallower (as identified in a site-specific geotechnical engineering report) to avoid the mixing of soil horizons. • Avoid construction in areas with saturated soils where topsoil salvage has not occurred whenever practical to reduce impacts to soil structure and allow safe access. Similarly, avoid topsoil salvage in saturated soils to maintain soil structure. • Keep topsoil material on site in the immediate vicinity of the temporary disturbance or at a nearby approved work area to be used in the restoration of temporarily disturbed areas. Recontour temporarily disturbed areas following construction to match pre-construction grades. Site and manage on-site material storage in accordance with all required permits and approvals.

APM Number	Description
	• Keep vegetation removal and soil disturbance to a minimum and limited to only the areas needed for construction and to provide adequate vegetation removal to meet initial electrical clearance and wildfire prevention requirements. Dispose of removed vegetation off site at an appropriate licensed facility, or it can be chipped on site to be used as mulch during restoration.
GHG-1	**Greenhouse Gas Emissions Reduction During Construction.** The following measures would be implemented during construction to minimize GHG emissions: • If suitable park-and-ride facilities are available in the Proposed Project vicinity, construction workers would be encouraged to carpool to the job site. • On-road and off-road vehicle tire pressures would be inflated to manufacturer specifications; tires would be checked and reinflated at regular intervals. • Demolition debris would be recycled for reuse to the extent feasible. • Line power, instead of diesel generators, would be used at construction sites where feasible. • Construction equipment would be maintained per the manufacturer's specifications.
HAZ-1	**Air Transit Coordination.** LSPGC would implement the following protocols related to helicopter use during construction and air traffic: • LSPGC would comply with all applicable FAA regulations regarding air traffic within 2 miles of the Proposed Project alignment. • LSPGC's helicopter operator would coordinate all Proposed Project helicopter operations with local airports before and during Proposed Project construction. • Helicopter use and landing zones would be managed to minimize impacts on local residents.
PALEO-1	**WEAP Training.** Prior to the start of the construction activities, all field personnel would receive a WEAP training on paleontological resources. The training would provide a description of the laws and ordinances protecting fossil resources, the types of fossil resources that may be encountered in the Proposed Project area, the role of the paleontological monitor, steps to follow if a fossil discovery is made, and contact information for the paleontologist. The training would be developed by the paleontologist and would be delivered concurrently with other training, including cultural, biological, and safety.
PALEO-2	**Paleontological Monitoring.** A professional paleontologist would be retained to monitor initial ground-disturbing activities in areas mapped as Pleistocene alluvial fan deposits (Qpf) and Montezuma Formation (Qmz). Monitoring would entail the visual inspection of excavated or graded areas and trench sidewalls. If a paleontological resource is discovered, the paleontological monitor would have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and, if appropriate, collected. If the resource is determined to be of scientific significance, the paleontological monitor would complete the following steps: • If fossils are discovered, all work in the immediate vicinity would be halted to allow the paleontological monitor to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the

APM Number	Description
	paleontological monitor would recover them by following standard field procedures for collecting paleontological resources. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (e.g., skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case, the paleontological monitor would have the authority to temporarily direct, divert, or halt construction activity to ensure that the fossils can be removed in a safe and timely manner. • An accredited repository, which has agreed to accept fossils that may be discovered during Proposed Project-related excavations, would be identified prior to construction activities. Upon completion of fieldwork, all significant fossils collected would be prepared in a properly equipped laboratory to a point ready for curation. Preparation may include the removal of excess matrix from fossil materials and stabilizing or repairing specimens. During preparation and inventory, the fossil specimens would be identified to the lowest taxonomic level practical prior to curation at an accredited repository (usually a museum). The fossil specimens would be delivered to the accredited museum or repository no later than 30 days after all laboratory work is completed. The cost of curation would be assessed by the repository and would be the responsibility of the client.
HYD-1	**Utilize In-Water Sediment Containment during Open Trenching in Marine Environments.** In-water sediment control BMPs (e.g., sediment curtains, silt barriers, turbidity curtains, or similar technologies) would be utilized when open trenching would occur in marine environments to reduce the amount of disturbed sediment discharged to the surrounding area and to reduce potential short-term impacts from mobilized sediment on surrounding benthic environments.
PUB-1	**School Access.** Construction of the proposed LSPGC Telecommunication Line within 320 feet of Saint Peter Martyr School would be coordinated with the school's administration and conducted during the summer months, at a time when school is out of session, in order to minimize disruptions to school access.
REC-1	**Access Restrictions in the Delta.** Construction crews would coordinate with the USCG's San Francisco Waterways Branch, the San Francisco VTC, and the City of Pittsburg's harbor master prior to any temporary in-water access restrictions to ensure that Delta users are aware of upcoming restrictions. In addition, a Local Notice to Mariners would be submitted to the USCG's District 11 at least 15 days prior to the start of in-water construction.
TRA-1	**Navigational Study.** LSPGC would submit a Navigational Study to the USCG documenting the potential effects of the construction and O&M of the Proposed Project on boat navigation within the Suisun Marsh and the Delta. Following the USCG's review, LSPGC would provide the study to the CPUC for its records prior to in-river construction.
UTIL-1	**Induction Study.** An induction study would be conducted to evaluate the potential effects of the Proposed Project on pipelines in its vicinity. The study would include applicable standards of the NESC pertaining to the need for interference analysis and anti-corrosion/cathodic protection. The study would model the electrical interference effects on pipelines during different electrical conditions, such as maximum load and fault conditions. Additionally, the study would perform a coating stress voltage and alternating current (AC) density analysis on the pipelines. The induction study would recommend AC mitigation methods based on the findings. All recommendations of the study would be incorporated into the final engineering and design for the Proposed Project.

APM Number	Description
FIRE-1	**Construction Fire Prevention Plan.** A Proposed Project-specific CFPP would be prepared and submitted to the CPUC for review prior to initiation of construction. The CFPP would be fully implemented throughout the construction period and would include, at a minimum, the following: • The purpose and applicability of the CFPP. • Responsibilities and duties. • Preparedness training and drills. • Procedures for fire reporting, response, and prevention that include the following: – Identification of daily site-specific risk conditions, – The tools and equipment needed on vehicles and to be on hand at sites, – Reiteration of fire prevention and safety considerations during tailboard meetings, and – Daily monitoring of the red flag warning system with appropriate restrictions on types and levels of permissible activity. • Coordination procedures with federal and local fire officials. • Crew training, including fire safety practices and restrictions. • Method(s) for verifying that all CFPP protocols and requirements are being followed. A Proposed Project Fire Marshal or similar qualified position would be established to enforce all provisions of the CFPP, as well as perform other duties related to fire detection, prevention, and suppression for the Proposed Project. Construction activities would be monitored to ensure implementation and effectiveness of the CFPP.

Table 3-16: PG&E Construction Measures

CM Number	Description
AES-1	All work areas would be maintained in a clean and orderly state.
AG-1	**Landowner Coordination.** PG&E would coordinate with landowners prior to construction and during restoration efforts. Measures to be implemented may include, but are not limited to, the following: • Provide notice to landowners outlining construction activities and restoration efforts. • Areas disturbed by construction of the Proposed Project restored in accordance with lease agreements, applicable operation and maintenance standards, and environmental permit requirements. • In areas containing permanent crops (i.e., grape vines, orchard crops, etc.) that must be removed to gain access to pole sites for construction purposes, PG&E may provide compensation to the farmer and/or landowner in coordination with the landowner.
AIR-1	**Tier 4 Construction Equipment.** Construction equipment with a rating between 100 and 750 hp would be required to use engines compliant with Environmental Protection Agency Tier 4 non-road engine standards. In the event that enough Tier 4 equipment is not available, documentation of the unavailability would be provided and engines utilizing a lower standard would be used.
AIR-2	**Fugitive Dust Control.** The following actions would be taken, as applicable and feasible, to control fugitive dust during construction. BAAQMD notifications would be made in accordance with any requirements in effect at the time of construction. • Applying water to disturbed areas and to storage stockpiles. • Applying water in sufficient quantities to prevent dust plumes during activities such as clearing & grubbing, backfilling, trenching and other earth moving activities. • Limit vehicle speed to 15 mph. • Load haul trucks with a freeboard (space between top of truck and load) of six inches or greater. • Cover the top of the haul truck load. • Clean-up track-out at least daily.
BIO-1	**Vernal Pool and Waters Avoidance.** Prohibit vehicular and equipment refueling 250 feet from the edge of vernal pools, and 100 feet from the edge of other wetlands, streams, or waterways. If refueling must be conducted closer to wetlands, construct a secondary containment area subject to review by an environmental field specialist and/or biologist. Maintain spill prevention and cleanup equipment in refueling areas. Maintain a buffer of 250 feet from the edge of vernal pools and 50 feet from the edge of wetlands, ponds, or riparian areas. If maintaining the buffer is not possible because the areas are either in or adjacent to facilities, the field crew would implement other measures as prescribed by the land planner, biologist, or HCP administrator to minimize impacts by flagging access, requiring foot access, restricting work until dry season, or requiring a biological monitor during the activity.

CM Number	Description
BIO-2	**Revegetation.** If the covered activity disturbs 0.1 acre or more of habitat for a covered species in grasslands, the field crew would revegetate the area with a commercial "weed free" seed mix.
BIO-3	**Worker's Environmental Awareness Training.** All workers on the Proposed Project site would be required to attend a Workers Environmental Awareness Program (WEAP) training. Training would inform all construction personnel of the resource protection and avoidance measures, as well as procedures to be followed upon the discovery of environmental resources. The WEAP training would include, at a minimum, the following topics so crews would understand their obligations: • Environmentally sensitive area boundaries, • Housekeeping (i.e., trash and equipment cleaning), • Safety, • Work stoppage, • Communication protocol, and • Consequences of non-compliance.
BIO-4	**Delineation and Avoidance of Sensitive Habitat Features.** A Designated Biologist would clearly identify sensitive resources that crews must avoid for the duration of the activities with posted signs, posting stakes, flags, and/or rope or cord, and place fencing as necessary to minimize or avoid disturbance.
BIO-5	**Special-Status Plant Species.** Occurrences of special-status plant species would be avoided to the extent practicable and would include performance of Proposed Project activities in special-status plant habitat after senescence. PG&E has created "Map Book zones" for the 13 state or federally listed plants that are covered in the O&M HCP. A Map Book zone is defined as an area of occupied or potentially occupied the HCP-covered plant species habitat as determined by PG&E botanical surveys. When rare and endangered plant species subject to the NPPA cannot be avoided, PG&E would follow the requirements of California Fish and Game Code Sections 1913(b) and 1913(c) concerning notification to CDFW at least 10 days in advance and provide an opportunity to salvage such species. If a special-status plant is found or known to occur, the plant would be avoided if feasible (i.e., O&M objectives could still be met). If feasible to avoid, avoidance would include establishing a buffer around the plants and demarcation of the buffer by a qualified biologist or botanist using flagging. Consideration of site-specific environmental factors such as terrain, site hydrology, light, and potential introduction of invasive plants may inform the avoidance approach.
BIO-6	**Biological Monitor.** For Covered Activities in Covered Species modeled habitat that require work over a period of two weeks or greater, a General Biological Monitor would conduct compliance inspections, at a minimum, once every week after clearing, grubbing, and grading are completed and during periods of inactivity.

CM Number	Description
BIO-7	**Clean Equipment and Materials.** Permittee would implement the following for activities that involve ground disturbance: • Mud and/or accumulated soils would be removed from equipment and vehicles to the maximum extent practicable. • Vehicles and equipment would be cleaned or washed before entering a new work site. • A log would be kept for each work site and would be completed to document each cleaning or washing of vehicles or equipment before entering each new work site. • Vehicles would be staged and stored on paved or cleared areas to the extent practicable. • Certified weed-free mulch, straw, hay bales, or equivalent materials would be used where necessary.
BIO-8	**Vehicle Travel.** Permittee would: • Park vehicles and equipment on pavement, existing roads, or other disturbed or designated areas (barren, gravel, compacted dirt). • Use existing access and ROW roads. Minimize the development of new access and ROW roads, including clearing and blading for temporary vehicle access in areas of natural vegetation. • Locate off-road access routes and work sites to minimize impacts on plants, shrubs, and trees, small mammal burrows, and unique natural features (e.g., rock outcrops). • Limit vehicle speeds on unpaved roads to 15 miles per hour.
BIO-9	**Trapped Animal Prevention.** Fit open trenches or steep-walled holes with escape ramps of plywood boards or sloped earthen ramps at each end if left open overnight. Field crews would search open trenches or steep-walled holes every morning prior to initiating daily activities to ensure wildlife are not trapped. If any wildlife are found, a biologist would be notified and would relocate the species to adjacent habitat or the species would be allowed to naturally disperse, as determined by a biologist. Minimize potential for covered species to seek refuge or shelter in pipes and culverts. Inspect pipes and culverts, of diameter wide enough to be entered by a covered species that could inhabit the area where pipes are stored, for wildlife species prior to moving pipes and culverts. Immediately contact a biologist if a covered species is suspected or discovered.
BIO-10	**Minimize Footprint.** Minimize the activity footprint and minimize the amount of time spent at a work location to reduce the potential for take of species.
BIO-11	**Construction Hours and Lighting.** Construction activities would cease 30 minutes before sunset and would not begin prior to 30 minutes after sunrise, where feasible. Night work would be limited in extent, duration, and brightness, to the extent feasible. If temporary construction lighting is required, PG&E would use shielded construction light fixtures, or otherwise screen or direct lighting away from nearby residences except in the cases of emergency.

CM Number	Description
BIO-12	**Nesting Birds.** If work is anticipated to occur within the nesting bird season (February–August 31) nesting birds, including raptors and other species protected under the Migratory Bird Treaty Act, may be impacted. If active nests are discovered, exclusionary measures and/or designated avoidance buffers may be required and implemented according to the guidance in the PG&E Nesting Bird Management Plan. The Proposed Project biologist determines if the construction action would impact the nest, and if so, identifies whether alternative actions or monitoring can be implemented to avoid impacts. If active nests are observed during construction, crews must immediately alert the PG&E project biologist. Nests with eggs and/or chicks would be avoided: contact a biologist, land planner or the Avian Protection Program manager for further guidance.
BIO-13	**Felling Trees.** Directionally fell trees away from an exclusion zone, if an exclusion zone has been defined. If this is not possible, remove the tree in sections. Avoid damage to adjacent trees to the extent possible. Avoid removal of snags and conifers with basal hollows, crown deformities, and/or limbs over 6 inches in diameter.
BIO-14	**Conservation Landowner Notification.** Notify conservation landowner at least 2 business days prior to conducting covered activities on protected lands (state and federally owned wildlife areas, ecological reserves, or conservation areas); more notice would be provided if possible or if required by other permits. If the work is an emergency, as defined in PG&E's Utility Procedure ENV-8003P-01, PG&E would notify the conservation landowner within 48 hours after initiating emergency work. While this notification is intended only to inform conservation landowner, PG&E would attempt to work with the conservation landowner to address landowner concerns.
BIO-15	**Prohibitions.** Prohibit trash dumping, firearms, open fires (such as barbecues), hunting, and pets (except for safety in remote locations) at work sites.
BIO-16	**Fire Suppression.** During fire season in designated State Responsibility Areas, equip all motorized equipment with federally approved or state-approved spark arrestors. Use a backpack pump filled with water and a shovel and fire-resistant mats and/or windscreens when welding. During fire "red flag" conditions as determined by CAL FIRE, curtail welding. Each fuel truck would carry a large fire extinguisher with a minimum rating of 40 B:C. Clear parking and storage areas of all flammable materials.
BIO-17	**Erosion and Sediment Control BMPs.** Utilize standard erosion and sediment control BMPs (pursuant to the most current version of PG&E's *Stormwater Field Manual for Construction Best Management Practices*) to prevent construction site runoff into waterways.
BIO-18	**Soil Stockpiling.** Stockpile soil within established work area boundaries and locate stockpiles so as not to enter water bodies, stormwater inlets, other standing bodies of water. Cover stockpiled soil prior to precipitation events.
CUL-1	**Worker Awareness Training.** PG&E would provide environmental awareness training on archeological resources protection. This training may be administered by the PG&E cultural resources specialist (CRS) or a designee as a stand-alone training or included as part of the overall environmental awareness training as required by the Proposed Project and would at minimum include: types of cultural resources or fossils that could occur at the Proposed Project site; types of soils or lithologies in which the cultural resources or fossils could be preserved; procedures that should be followed in the event of a cultural resource or human remain discovery; and penalties for disturbing cultural resources

CM Number	Description
CUL-2	**Flag and Avoid Known Resources.** Sites would be marked with flagging tape, safety fencing, and/or sign designating it as an "environmentally sensitive area" to ensure that PG&E construction crews and heavy equipment would not intrude on these sites during construction. At the discretion of the PG&E CRS, monitoring may be done in lieu of or in addition to flagging. If it is determined that the Proposed Project cannot avoid impacts on one or more of the sites, then, for those sites that have not been previously evaluated, evaluation for inclusion in the National Register of Historic Places (NRHP)/California Register of Historic Resources (CRHR) would be conducted. Should the site be found eligible, appropriate measures to reduce the impact to a less-than-significant level would be implemented, including but not limited to data recovery, photographic and archival documentation, or other measures as deemed appropriate. If it is determined that sites that have been previously determined to be eligible for inclusion in either the NRHP or CRHR cannot be avoided, measures would be implemented to reduce the impact to a less-than-significant level, including but not limited to data recovery, photographic and archival documentation, or other measures as deemed appropriate.
CUL-3	**Unanticipated Cultural Resources Discoveries.** a. Unanticipated Cultural Resources. If unanticipated cultural resources are inadvertently discovered during site preparation or construction activities, work would stop in that area and within 50 feet of the find until CRS or their qualified designee can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with PG&E and other appropriate agencies. Work may continue on other portions of the site with the CRS's approval. PG&E would implement the CRS's or their designee's recommendations for treatment of discovered cultural resources. b. Human Remains. In the unlikely event that human remains or suspected human remains are uncovered during preconstruction testing or during construction, all work within 50 feet of the discovery would be halted and redirected to another location. The find would be secured, and the CRS or designated representative would be contacted immediately to inspect the find and determine whether the remains are human. If the remains are not human, the CRS would determine whether the find is an archaeological deposit and whether paragraph (a) of this CM should apply. If the remains are human, the cultural resources specialist would immediately implement the applicable provisions in PRC Sections 5097.9 through 5097.996, beginning with the immediate notification to the affected county coroner. The coroner has two working days to examine human remains after being notified. If the coroner determines that the remains are Native American, California Health and Safety Code 7050.5 and PRC Section 5097.98 require that the cultural resources specialist contact the Native American Heritage Commission (NAHC) within 24 hours. The NAHC, as required by PRC Section 5097.98, would determine and notify the Most Likely Descendant.

CM Number	Description
GEO-1	**Minimize Construction in Soft or Loose Soils.** Where soft or loose soils are encountered during Proposed Project construction, several actions are available, feasible and can be implemented to avoid, accommodate, replace, or improve such soils. Depending on site-specific conditions and permit requirements, one or more of these actions may be implemented to eliminate impacts from soft or loose soils: • Locating construction facilities and operations away from areas of soft and loose soil. • Over-excavating soft or loose soils and replacing them with engineered backfill materials. • Increasing the density and strength of soft or loose soils through mechanical vibration and/or compaction. • Installing material, such as aggregate rock, steel plates, or timber mats, over access roads. • Treating soft or loose soils in place with binding or cementing.
PALEO-1	**Worker Awareness Training.** PG&E would provide environmental awareness training on paleontological resources protection. This training may be administered by the PG&E cultural resources specialist (CRS) or a designee as a stand-alone training or included as part of the overall environmental awareness training as required by the Proposed Project and would at minimum include: types of cultural resources or fossils that could occur at the Proposed Project site; types of soils or lithologies in which the cultural resources or fossils could be preserved; procedures that should be followed in the event of a cultural resource or human remain discovery; and penalties for disturbing paleontological resources.
PALEO-2	**Paleontological Monitoring.** A professional paleontologist would be retained to monitor initial ground-disturbing activities in previously undisturbed areas mapped as Montezuma Formation (Qmz). Monitoring would entail the visual inspection of excavated or graded areas and trench sidewalls. If a paleontological resource is discovered, the paleontological monitor would have the authority to temporarily divert the construction equipment around the find until it is assessed for scientific significance and, if appropriate, collected. If the resource is determined to be of scientific significance, the paleontological monitor would complete the following steps: • If fossils are discovered, all work in the immediate vicinity would be halted to allow the paleontological monitor to evaluate the discovery and determine if the fossil may be considered significant. If the fossils are determined to be potentially significant, the paleontological monitor would recover them by following standard field procedures for collecting paleontological resources. Typically, fossils can be safely salvaged quickly by a single paleontologist and not disrupt construction activity. In some cases, larger fossils (e.g., skeletons or large mammal fossils) require more extensive excavation and longer salvage periods. In this case, the paleontological monitor would have the authority to temporarily direct, divert, or halt construction activity to ensure that the fossils can be removed in a safe and timely manner. • An accredited repository, which has agreed to accept fossils that may be discovered during Proposed Project-related excavations, would be identified prior to construction activities. Upon completion of fieldwork, all significant fossils collected would be prepared in a properly equipped laboratory to a point ready for curation. Preparation may include the removal of excess matrix from fossil materials and stabilizing or repairing specimens. During preparation and inventory, the fossil specimens would be

CM Number	Description
	identified to the lowest taxonomic level practical prior to curation at an accredited repository (usually a museum). The fossil specimens would be delivered to the accredited museum or repository no later than 30 days after all laboratory work is completed. The cost of curation would be assessed by the repository and would be the responsibility of the client.
GHG-1	**Greenhouse Gas Emissions Reduction During Construction.** The following actions would be taken, as feasible, to minimize greenhouse gas emissions. • Encourage construction workers to carpool to the job site to the extent feasible. The ability to develop an effective carpool program for the Proposed Project would depend upon the proximity of carpool facilities to the area, the geographical commute departure points of construction workers, and the extent to which carpooling would not adversely affect worker arrival time and the Proposed Project's construction schedule. • Minimize unnecessary construction vehicle idling time for on-road and off-road vehicles. The ability to limit construction vehicle idling time would depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The Proposed Project would apply a "common sense" approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine would be shut off. Construction foremen would include briefings to crews on vehicle use as part of preconstruction conferences. Those briefings would include discussion of a "common sense" approach to vehicle use. • Maintain construction equipment in proper working conditions in accordance with PG&E standards. • Minimize construction equipment exhaust by using low-emission or electric construction equipment, where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later would be registered under the CARB Statewide Portable Equipment Registration Program. • Minimize welding and cutting by using compression of mechanical applications where practical and within standards. • Encourage use of natural gas-powered vehicles for passenger cars and light-duty trucks where feasible and available. • Encourage recycling construction waste where feasible.
HAZ-1	**Hazardous-Substance Control and Emergency Response.** PG&E would implement its hazardous substance control and emergency response procedures to ensure the safety of the public and site workers during construction. The procedures identify methods and techniques to minimize the exposure of the public and site workers to potentially hazardous materials during all phases of Proposed Project construction through operation. They address worker training appropriate to the site worker's role in hazardous substance control and emergency response. The procedures also require implementing appropriate control methods and approved containment and spill-control practices for construction and materials stored on-site. If it is necessary to store chemicals on-site, they would be managed in accordance with all applicable regulations. Material safety data sheets would be maintained and kept available on-site, as applicable.

CM Number	Description
	Proposed Project construction would involve soil surface blading/leveling, excavation of up to several feet, and augering to a maximum depth of 35 feet in some areas. In the event that soils suspected of being contaminated (on the basis of visual, olfactory, or other evidence) are removed during site grading activities or excavation activities, the excavated soil would be tested, and if contaminated above hazardous waste levels, would be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil would require testing and investigation procedures to be supervised by a qualified person, as appropriate, to meet state and federal regulations. All hazardous materials and hazardous wastes would be handled, stored, and disposed of in accordance with all applicable regulations, by personnel qualified to handle hazardous materials. The hazardous substance control and emergency response procedures include, but are not limited to, the following: • Proper disposal of potentially contaminated soils. • Establishing site-specific buffers for construction vehicles and equipment located near sensitive resources. • Emergency response and reporting procedures to address hazardous material spills. • Stopping work at that location and contacting the County Fire Department Hazardous Materials Unit immediately if visual contamination or chemical odors are detected. Work would be resumed at this location after any necessary consultation and approval by the Hazardous Materials Unit.
HAZ-2	**Worker Environmental Awareness.** The training would include the following components related to hazards and hazardous materials: • PG&E Health, Safety, and Environmental expectations and management structure. • Applicable regulations. • Summary of the hazardous substances and materials that may be handled and/or to which workers may be exposed. • Summary of the primary workplace hazards to which workers may be exposed. • Overview of the controls identified in the Storm Water Pollution Prevention Plan.
HAZ-3	**Air Transit Coordination.** PG&E would implement the following protocols related to helicopter use during construction and air traffic: • PG&E would comply with all applicable Federal Aviation Administration (FAA) regulations regarding air traffic within 2 miles of the Proposed Project alignment. • PG&E's helicopter operator would coordinate all Proposed Project helicopter operations with local airports before and during Proposed Project construction. • Helicopter use and landing zones would be managed to minimize impacts on local residents.

CM Number	Description
HYD-1	**Micro-Site Distribution Poles.** The distribution poles associated with the proposed PG&E 12 kV Distribution Line would be micro-sited in a manner that minimizes permanent impacts to sensitive wetland resources located along the alignment as a result of pole siting to the extent feasible. In the event that it is not possible to site poles in a manner that avoids impacts to wetlands, all appropriate permits would be obtained and any associated permit conditions would be implemented.
HYD-2	**Prepare and Implement a Storm Water Pollution Prevention Plan.** PG&E would prepare and implement a SWPPP to prevent construction-related erosion and sediments from entering nearby waterways. The SWPPP would include a list of BMPs to be implemented in areas with potential to drain to any water body. BMPs to be part of the Proposed Project-specific SWPPP may include, but are not limited to, the following control measures. • Implementing temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, grass buffer strips, high infiltration substrates, grassy swales, and temporary revegetation or other ground cover) to control erosion from disturbed areas. • Protecting drainage facilities in downstream off-site areas from sediment using appropriate BMPs. • Protecting the quality of surface water from non-stormwater discharges such as equipment leaks, hazardous materials spills, and discharge of groundwater from dewatering operations. • Restoring disturbed areas, after Proposed Project construction is completed, unless otherwise requested by the landowner in agricultural land use areas.
NOI-1	**Employ Noise-Reducing Construction Practices during Temporary Construction Activities.** PG&E would employ standard noise-reducing construction practices such as the following: • Ensure that all equipment is equipped with mufflers that meet or exceed factory new-equipment standards. • Locate stationary equipment as far as practical from noise-sensitive receptors. • Limit unnecessary engine idling. • Limit all construction activity near sensitive receptors to daytime hours unless required for safety or to comply with line clearance requirements. Minimize noise-related disruption by notifying residents. Should nighttime Proposed Project construction be necessary because of planned clearance restrictions, affected residents would be notified at least 7 days in advance by mail, personal visit, or door hanger, and informed of the expected work schedule.

CM Number	Description
TRA-1	**Temporary Traffic Controls.** PG&E would obtain any necessary transportation and encroachment permits from the California Department of Transportation and the local jurisdictions, as required, including those related to state route crossings and the transport of oversized loads and certain materials, and would comply with permit requirements designed to prevent excessive congestion or traffic hazards during construction. PG&E would develop road and lane closure or width reduction or traffic diversion plans as required by the encroachment permits. Construction activities that are in or along or that cross local roadways would follow best management practices and local jurisdictional encroachment permit requirements—such as traffic controls in the form of signs, cones, and flaggers—to minimize impacts on traffic and transportation in the Proposed Project area.
TRA-2	**Coordinate Road Closures with Emergency Service Providers.** At least 24 hours prior to implementing any road or lane closure, PG&E would coordinate with applicable emergency service providers in the Proposed Project vicinity. PG&E would provide emergency service providers with information regarding the road or lanes to be closed; the anticipated date, time, and duration of closures; and a contact telephone number.
FIRE-1	**Fire Risk Management.** PG&E would follow its standard fire risk management procedures, including safe work practices, work permit programs, training, and fire response. Proposed Project personnel would be directed to park away from dry vegetation. During fire season in designated State Responsibility Areas, all motorized equipment driving off paved or maintained gravel/dirt roads would have federally approved or State-approved spark arrestors. All off-road vehicles would be equipped with a backpack pump (filled with water) and a shovel. Fire-resistant mats and/or windscreens would be used when welding. In addition, during fire “red flag” conditions (as determined by CAL FIRE), welding would be curtailed. Every fuel truck would carry a large fire extinguisher with a minimum rating of 40 B:C, and all flammable materials would be removed from equipment parking and storage areas.

ATTACHMENT 3-A: DETAILED ROUTE MAP

ATTACHMENT 3-B: WILDFIRE MITIGATION PLANS