1.0 ALTERNATIVE DESCRIPTION

This chapter describes the New Templeton Substation and Paso Robles-Templeton South River Route Alternative (alternative) location, components, easement requirements, construction methods, and operation and maintenance. This is an alternative requested by the California Public Utilities Commission to the Estrella Substation and Paso Robles Area Reinforcement Project (project) proposed by Horizon West Transmission LLC (HWT) and Pacific Gas and Electric Company (PG&E), herein referred to as the "project proponents."

1.1 OVERVIEW

The alternative includes the following components:

- **New Templeton Substation:** Construct and operate a new 230 kilovolt (kV) electrical substation and a new 70 kV substation located in an unincorporated portion of northern San Luis Obispo County to the east of the existing Templeton Substation owned and operated by PG&E. HWT would prepare the entire substation site and construct and operate the 230 kV portion of the substation. PG&E would construct and operate the 70 kV portion of the substation, which would include a location for future 70/21 kV distribution facilities.
- **70 kV Power Line Work:** Construct and operate approximately 5.2 miles of new overhead 70 kV double-circuit power line between the New Templeton Substation and the existing Paso Robles Substation in the city of Paso Robles. PG&E would undertake this portion of the alternative.

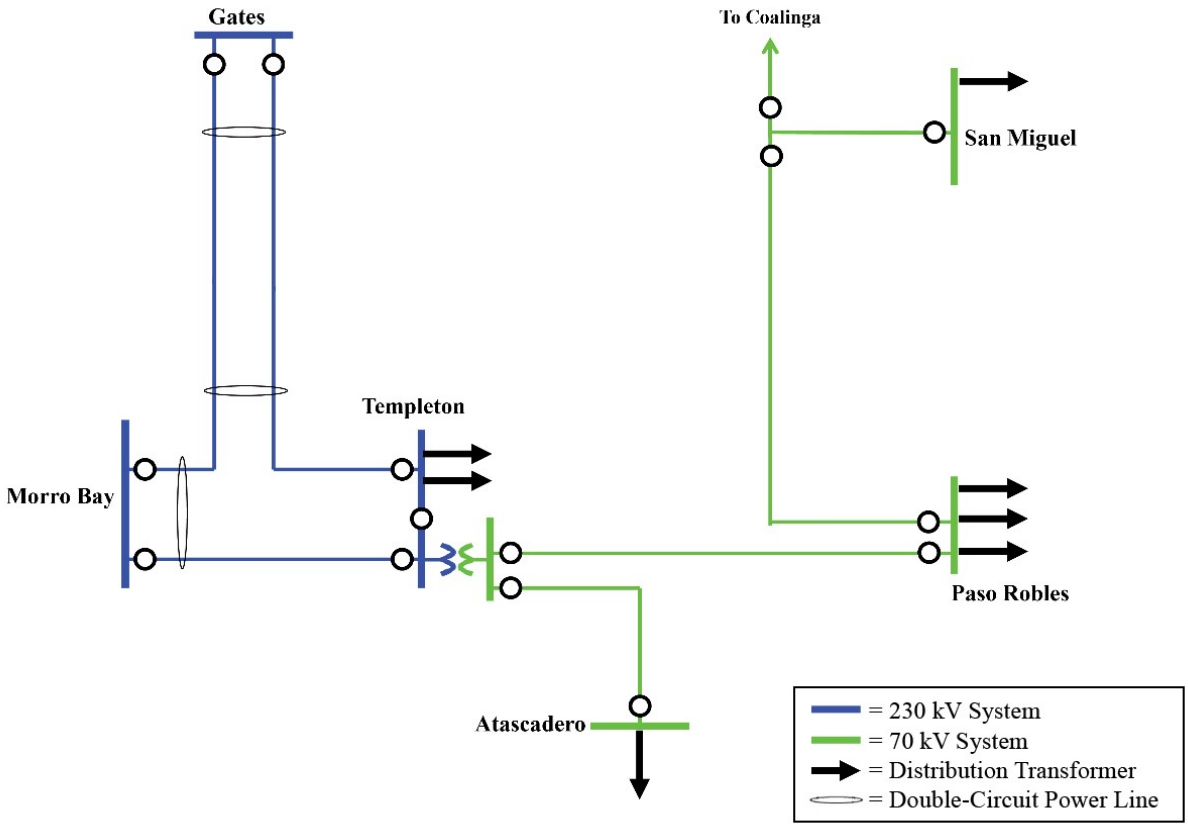
Minor modifications within existing area substations and rearrangement of existing transmission lines would be required to accommodate the alternative.

1.2 EXISTING SYSTEM

For northern San Luis Obispo County, electric power is transmitted at voltages of 230 kV and 70 kV and originates from three regional substations: Gates, Morro Bay, and Templeton. Figure 2-1, Existing Electric Transmission System, provides a simplified schematic of the existing transmission system. Power from these regional substations is then stepped down at local distribution substations and distributed to customers using overhead or underground distribution lines at voltages of 12 kV or 21 kV.

Two 230 kV circuits connect Gates Substation to Morro Bay Substation. One of these circuits interconnects with the existing Templeton Substation along the way. The existing Templeton Substation provides transmission power to northern Atascadero, Templeton, Creston, and surrounding rural areas. The Templeton-Gates 230 kV transmission line is stepped down from 230 kV to 70 kV at the existing Templeton Substation using a 230/70 kV transformer. The existing Templeton Substation then transmits 70 kV electric power to Atascadero, Paso Robles, and San Miguel Substations, where the voltage is further stepped down to 12 kV or 21 kV to provide power for distribution to their respective local communities. The existing Templeton Substation is also a 70/21 kV distribution substation with three feeders extending north and three distribution lines (feeders) extending south.

Figure 1-1. Existing Electric Transmission System



1.3 PROPOSED SYSTEM

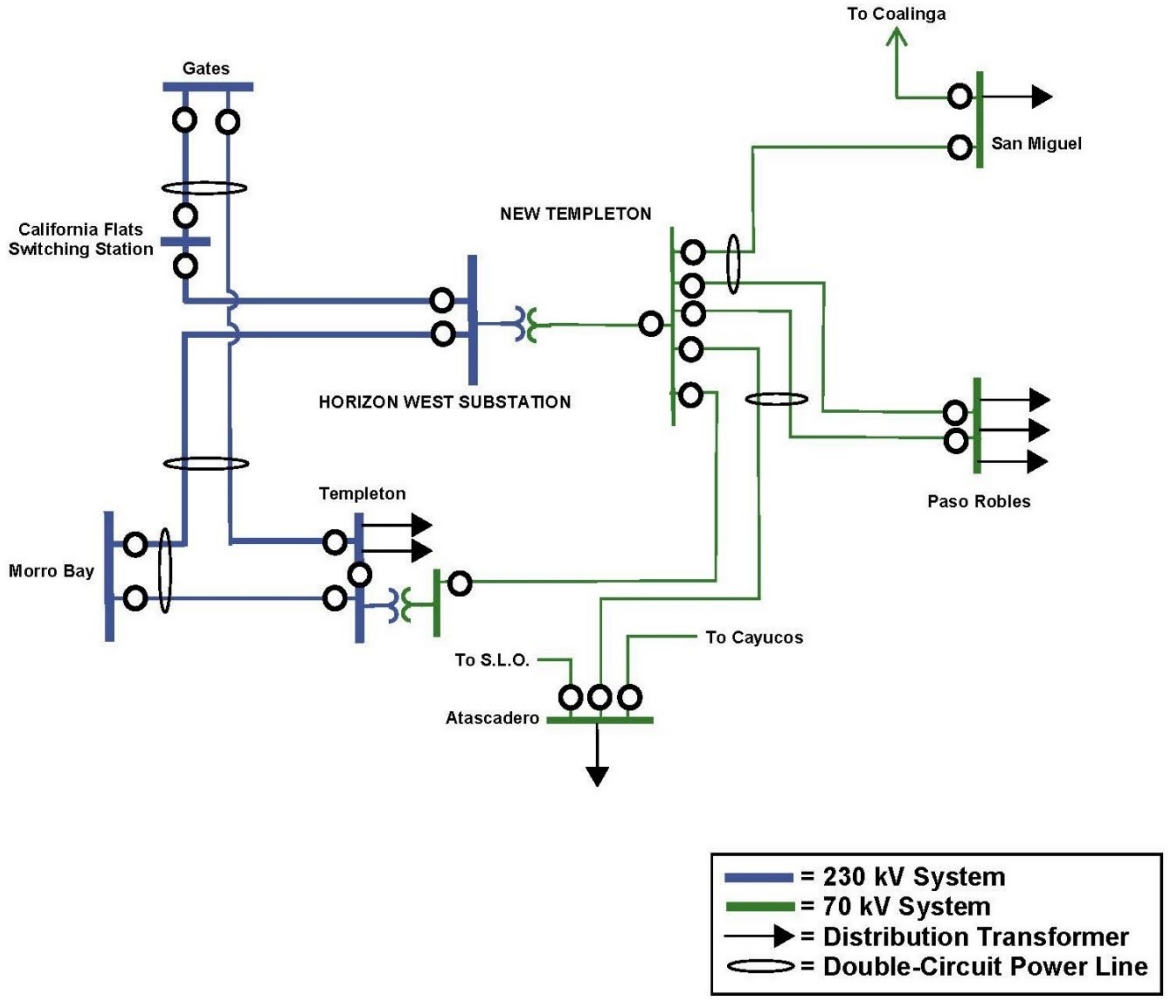
Figure 2-2, Proposed Electric Transmission System, provides an overview of the service territory if the alternative would be put in-service. Minor modifications would be required at California Flats Switching Station and Morro Bay, Paso Robles, San Miguel, and existing Templeton Substations, and phasing on existing lines would need to be rearranged in order to accommodate the changes to the existing electrical system.

The 70 kV substation component includes a location for the new 70/21 kV distribution facilities, including a new distribution transformer and three 21 kV feeders, and provide approximately 28 MW of additional distribution capacity when needed. These new distribution facilities are considered a reasonably foreseeable consequence of the alternative for California Environmental Quality Act (CEQA) review purposes.

There are no other foreseeable future phases or projects that are currently connected to or associated with the construction, operation, or maintenance of the alternative or any of its components. Any future expansion would be based upon future electrical demand and/or reliability requirements and would not be part of this alternative. While New Templeton Substation, at ultimate build-out, would have space for future 230 kV transmission lines, a second 230/70 kV transformer, and associated transmission facilities on the HWT portion of the site, and future 70 kV lines, two additional 70/21 kV distribution transformers, and associated

distribution facilities on the PG&E portion of the site, these future transmission and substation facilities are not yet planned and are unlikely to be built for at least 20 years, if at all. This potential future expansion would therefore not be reasonably foreseeable.

Figure 1-2. Proposed Electric Transmission System

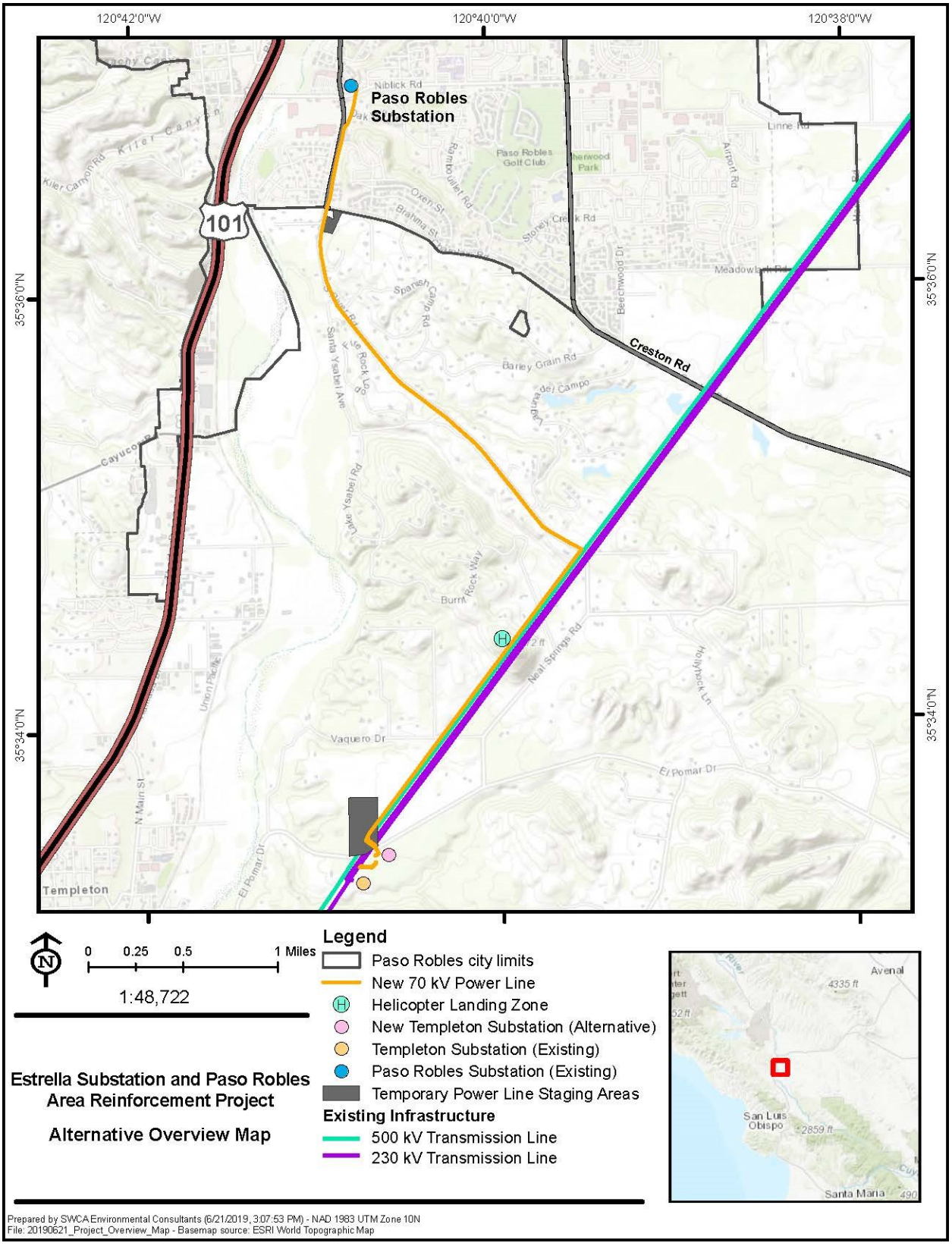


1.4 ALTERNATIVE LOCATION

The alternative would be located within the northern portion of San Luis Obispo County, California, including portions of the city of Paso Robles. The nearest other communities are Templeton, which is approximately 0.6 mile to the west, and Atascadero, which is about 2.1 miles to the southwest (see Figure 2-3, Alternative Overview Map).

Land uses in the alternative area are a mixture of intensive agriculture and urban and rural residential development. Within the city limits, land uses consist of commercial development, residential development, and public facilities. Topography in the vicinity of the alternative is generally rolling hills, with existing elevations ranging from approximately 920 feet to 960 feet above mean sea level.

Figure 1-3. Alternative Overview Map



1.4.1 New Templeton Substation

New Templeton Substation would be located on an approximately 19-acre portion of a 234.3-acre parcel of land and is comprised of HWT's 230 kV substation and PG&E's 70 kV substation (see Figure 2-4, New Templeton Substation Site Overview Map). Collectively, these two substations are referred to herein as New Templeton Substation.

The entire approximately 19-acre New Templeton Substation site is currently composed of nonnative grassland. Several existing dirt roads traverse the parcel. Scattered oak trees are located within the site with one abandoned trailer, one barn, and one shed at the southwest corner of the site. An ephemeral tributary to Salinas River, passes approximately 675 feet to the south of the alternative substation site. With the exception of the one abandoned residence, the existing Templeton Substation, and an existing solar facility, no commercial, religious, or public facilities are located within 1,000 feet of the perimeter of the substation site. The topography of the site is relatively flat with rolling hills in the vicinity.

The site is bordered by El Pomar Drive, PG&E's existing easement for a 230 kV double-circuit transmission line and a 500 kV transmission line, and vineyards to the northwest, and nonnative grasslands to the southwest, southeast, and northeast. The existing transmission lines traverse to the northwest of the New Templeton Substation site on two sets of lattice steel towers (LSTs).

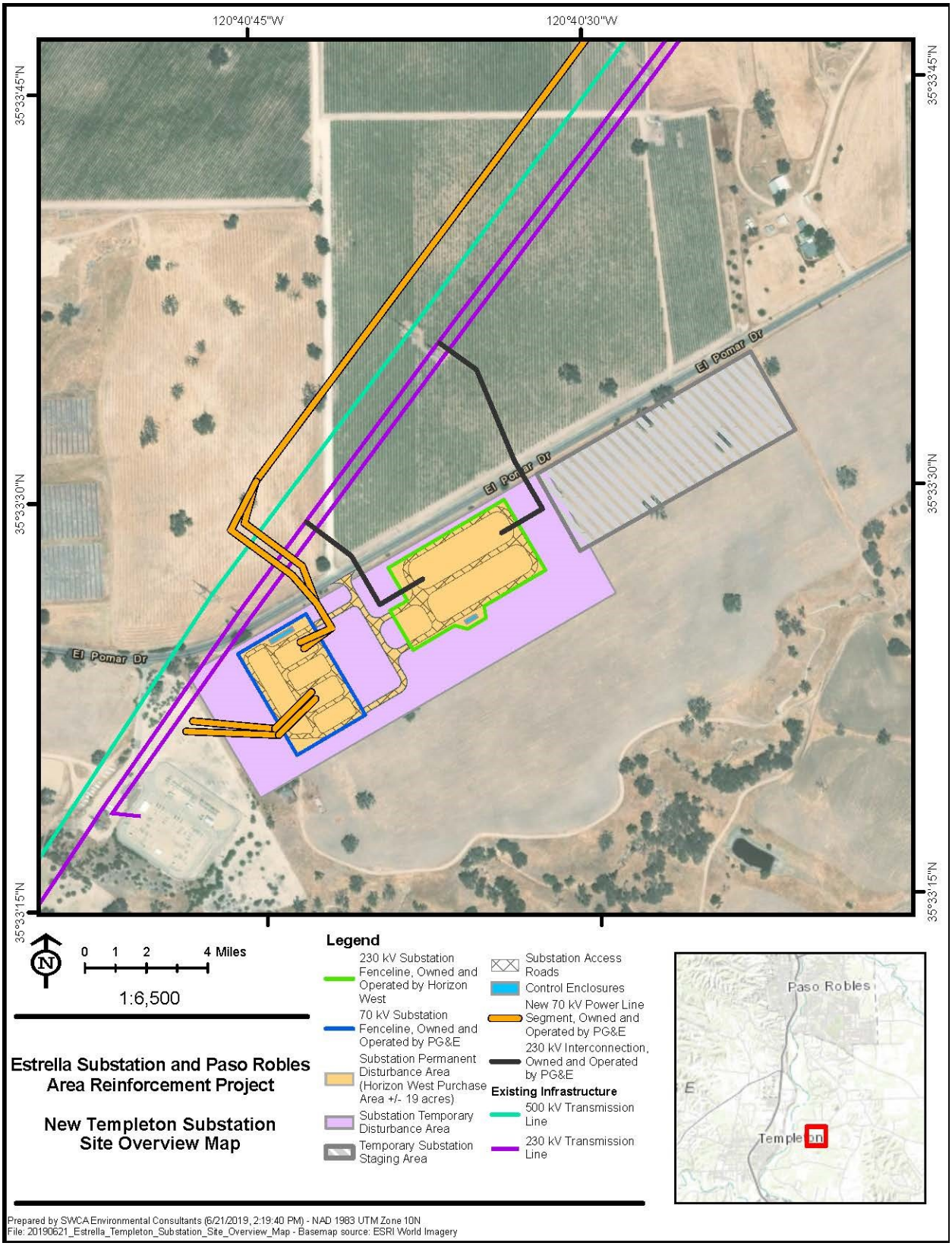
The existing 230 kV transmission line would be interconnected into the new 230 kV Templeton Substation as part of the alternative. The 230 kV transmission interconnection would be constructed within the existing PG&E easement and the project substation property.

1.4.2 Power Line

The power line would consist of a new, approximately 5.2-mile-long 70 kV power line between New Templeton Substation and the existing Paso Robles Substation.

The new 70 kV power line would travel northeasterly from New Templeton Substation, crossing under and paralleling existing 230 kV and 500 kV transmission lines, and spanning over vineyards and nonnative grasslands for approximately 2 miles where it intersects with South River Road. The new line would turn northwesterly along South River Road, extending through residential properties. The line would follow the north side of the road for approximately 0.2 mile, cross to the south side of the road for approximately 1.6 miles, then cross to the north side of the road for approximately 0.1 mile. The line would then turn north and continue on the east side of the road for approximately 0.9 mile, then follow the east side of a frontage road north of Kennedy Club Fitness for 0.2 mile before crossing Niblick Road and entering Paso Robles Substation (approximately 0.1 mile).

Figure 1-4. New Templeton Substation Site Overview Map



1.5 PROJECT COMPONENTS

The alternative would be comprised of two main components: New Templeton Substation and the 70 kV Power Line. Each of these main components have several subcomponents, which are described below.

- **New Templeton Substation Components**
  - Constructing a new 230 kV substation to be owned and operated by HWT
  - Constructing a new 70 kV substation to be owned and operated by PG&E, with a location for future 70/21 kV distribution facilities
  - Constructing a 230 kV transmission line interconnection to be owned and operated by PG&E
- **Power Line Components**
  - Constructing a new 70 kV double-circuit power line between the new 70 kV substation and Paso Robles Substation, owned and operated by PG&E

A fiber optic line for communication services would be installed on the 70 kV power line to provide a fiber optic link between New Templeton Substation and Paso Robles Substation. The various project components are described in the following sections and summarized in Table 2-1, Project Components.

Table 1-1. Project Components

Component	Approximate Quantity	Approximate Height Range and Average Height (feet)	Total Approximate Permanent Ground Disturbance (Acres)
New Templeton Substation*			
Substations			
230 kV Substation	1	65 (approximate tallest 230 kV dead-end structure)	3.9 (fenced portion)
70 kV Substation	1	37 (approximate tallest 70 kV dead-end structure)	2.9 (fenced portion)
230 kV Transmission Line Interconnection			
Tubular Steel Pole	8	46–127 60	0.4

Table 1-1. Project Components

Component	Approximate Quantity	Approximate Height Range and Average Height (feet)	Total Approximate Permanent Ground Disturbance (Acres)
New 70 kV Tie Lines and Existing 70 kV Power Line Reconfiguration			
Tubular Steel Pole/Light Duty Steel Pole	8	75-140 94	0.4
Power Line Route**			
New 70 kV Power Line			
Light-Duty Steel Pole	40	75–90 79	1.8
Tubular Steel Pole	23	75–140 109	1.5

Notes: This table is preliminary and subject to change based on CPUC requirements, final engineering, and other factors. `

* Permanent ground disturbance for New Templeton Substation is approximately 19 acres, including the area that would be permanently disturbed outside of the 230 kV and 70 kV substation fence lines.

** Permanent ground disturbance for the power line route assumes a 25-foot radius at each pole location in vegetated areas.

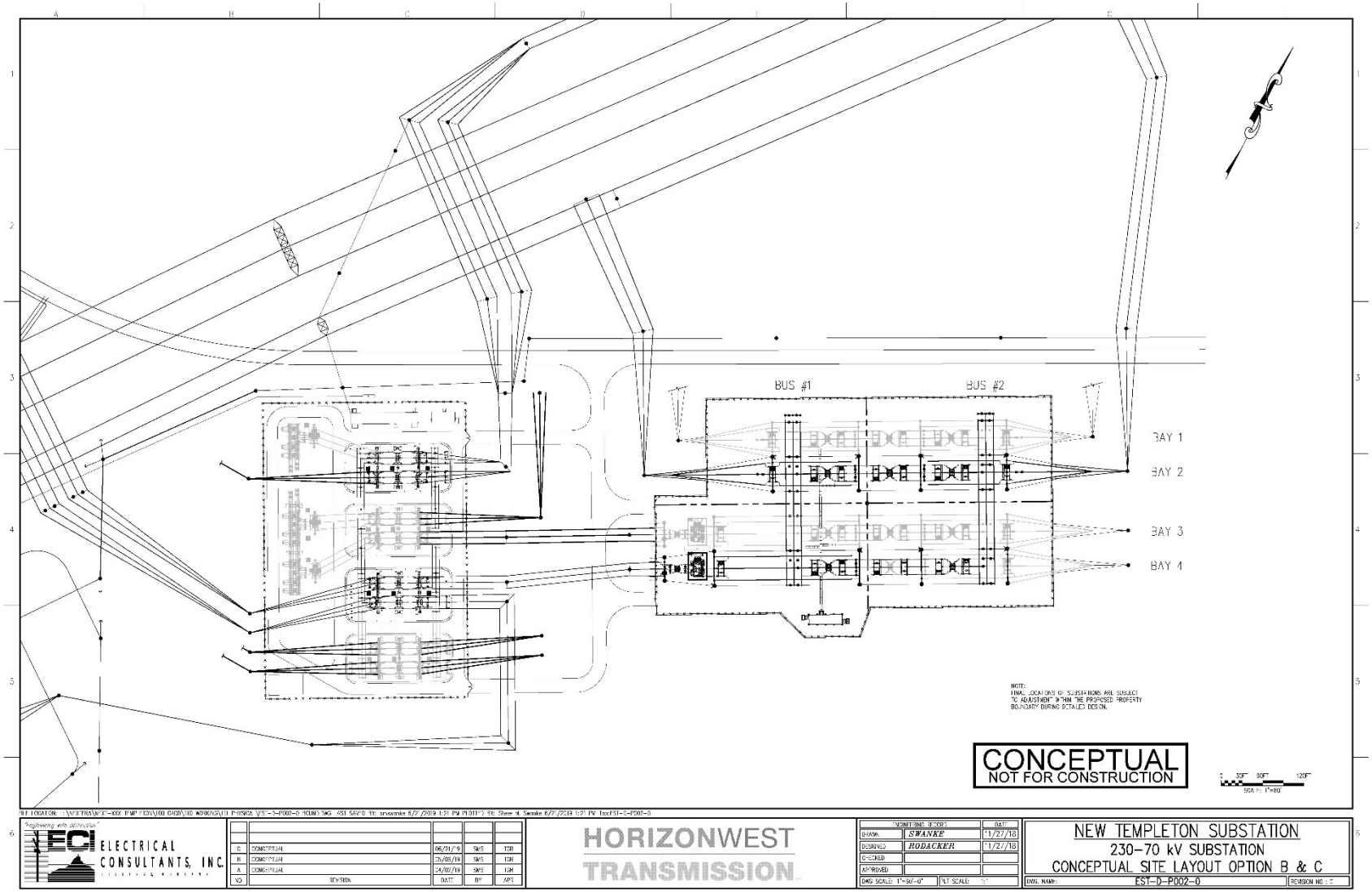
1.5.1 New Templeton Substation

New Templeton Substation would be comprised of two separate and distinct substations on an approximately 19-acre site. One 230 kV substation would be constructed, operated, and owned by HWT and one 70 kV substation would be constructed (following site preparation and rough grading work by HWT), operated, and owned by PG&E. The preliminary substation layout is provided in Figure 2-5, New Templeton Substation Layout.

Access to the New Templeton Substation site would be off El Pomar Drive, on a new main private access road. The main access road would be paved and measure about 985 feet long and typically about 20 feet wide. Interior asphalt-paved roads within New Templeton Substation would measure, in total, approximately 3,945 feet long and typically about 16 feet wide. Areas outside of the equipment foundations would be covered with about 6 inches of crushed rock. The private access driveway would occupy about 0.5 acre and the interior roads would occupy about 1.8 acres.

The private drive extending from El Pomar Drive would have a secure gate accessible by both HWT and PG&E. The entrance location would be in compliance with the San Luis Obispo County requirements for line of sight. The 230 kV and 70 kV substations would each have secure gates accessible only by the respective HWT and PG&E staff. From the main access road, the 230 kV substation and the 70 kV substation would each have two separate access points. The entrance gates would be a minimum 16 feet in width and would be locked and

Figure 1-5. New Templeton Substation Layout



monitored remotely to limit access to only qualified personnel. Warning signs would be posted on the perimeter chain-link fencing and gates in accordance with the National Electric Safety Code (NESC) and the respective HWT and PG&E guidelines.

Lighting would be installed at New Templeton Substation and would conform to NESC requirements. NESC recommends, as good practice, illuminating the substation facilities to a minimum of 22 lux or 2 foot-candles. Lighting would consist of sodium vapor or light-emitting diode fixtures and would be installed inside the facility and at the entry/exit gates to allow for safe access to the facility and its equipment. The fixtures would be mounted on legs of dead-end or switch support structures, the control enclosure, and on approximately 12-foot-tall galvanized steel lighting poles. Lights would be controlled by a photocell that automatically turns the lights on and off. All on-site lighting would be oriented downward to minimize glare onto surrounding property. Additional manually controlled lighting would also be provided to create safe working conditions at the substation when required. The exact number of fixtures and their output and location would be determined during final facility design.

The 230 kV and 70 kV substations would have their own sources of station power. Power required for construction and operation of New Templeton Substation would be supplied by tapping into the existing power lines adjacent to each substation site and/or from the 230/70 kV transformer bank to be installed. Electric service would be requested from the local utility and applied for so that power can be served from the existing power lines adjacent to the station. Small generators may also be used to supply temporary power during construction at the substation site.

The existing telecommunications network installed on the existing 230 kV line would connect to New Templeton Substation by splicing into the optical ground wire (OPGW) on the nearby existing 230 kV towers and running an ADSS fiber underground into the new control building at New Templeton Substation. A separate ADSS fiber optic line would exit the control building at New Templeton Substation underground and/or overhead to the new 70 kV power line then follow the new 70 kV power line into Paso Robles Substation. An additional ADSS fiber optic line will route from the existing Templeton Substation control building east to the New Templeton Substation.

1.5.1.1 230 kV Substation

The 230 kV substation would be owned and operated by HWT. The preliminary configuration for the 230 kV substation is provided in Figure 2-6, 230 kV Substation General Arrangement, and Figure 2-7, 230 kV Substation Profile View. The tallest structures within the 230 kV substation would be the dead-end structures, which are approximately 65 feet high and 50 feet wide.

The following electrical equipment would be located within the fenced area of the 230 kV substation in the proposed configuration:

- Two 230 kV Aluminum Buses
- One three-phase 230/70 kV 200 Megavolt Amperes (MVA) Transformer
- Fifteen 230 kV Capacitive Voltage Transformers

Figure 1-6. 230 kV Substation General Arrangement

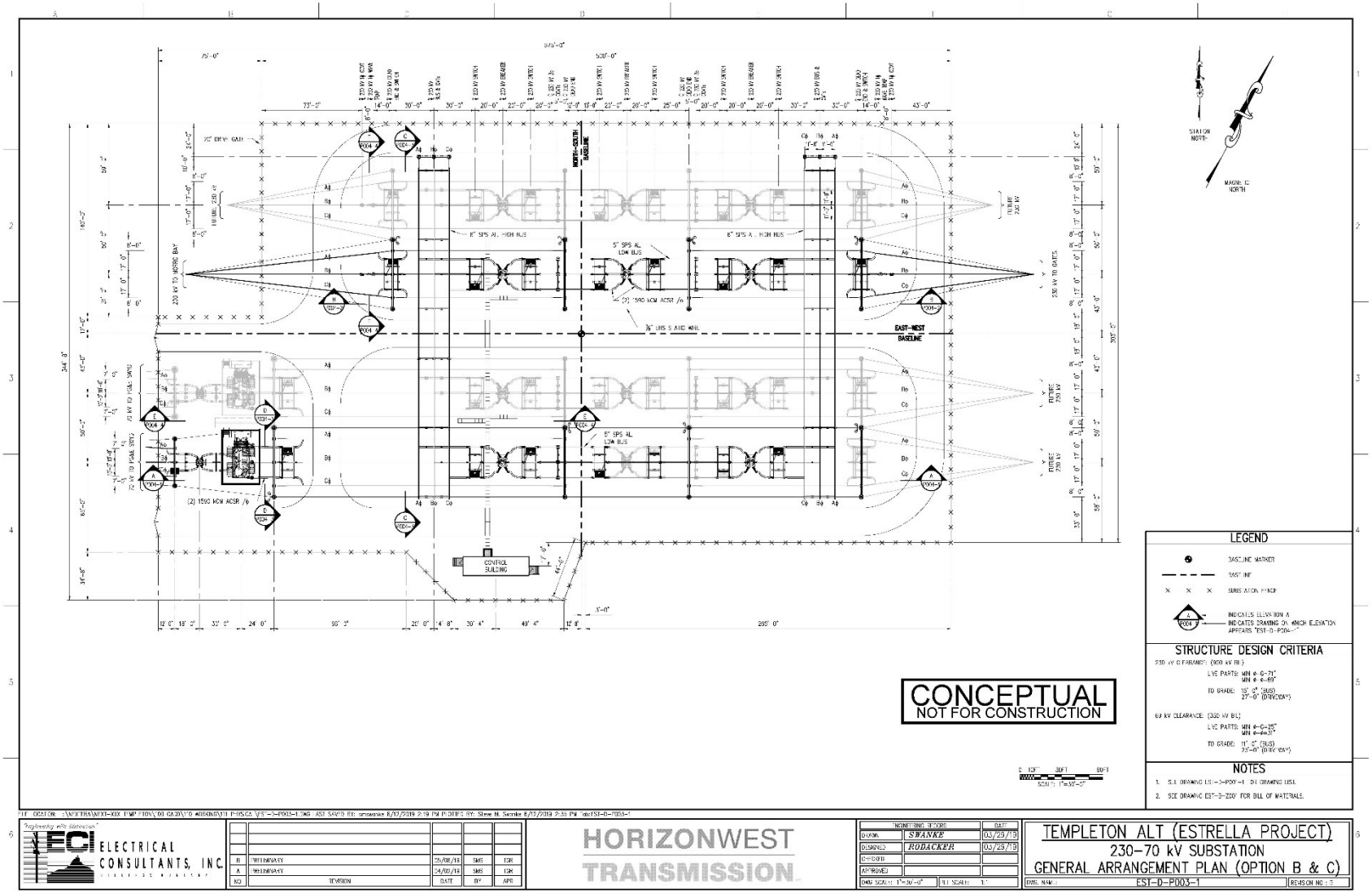


Figure 1-7a. 230 kV Substation Profile View

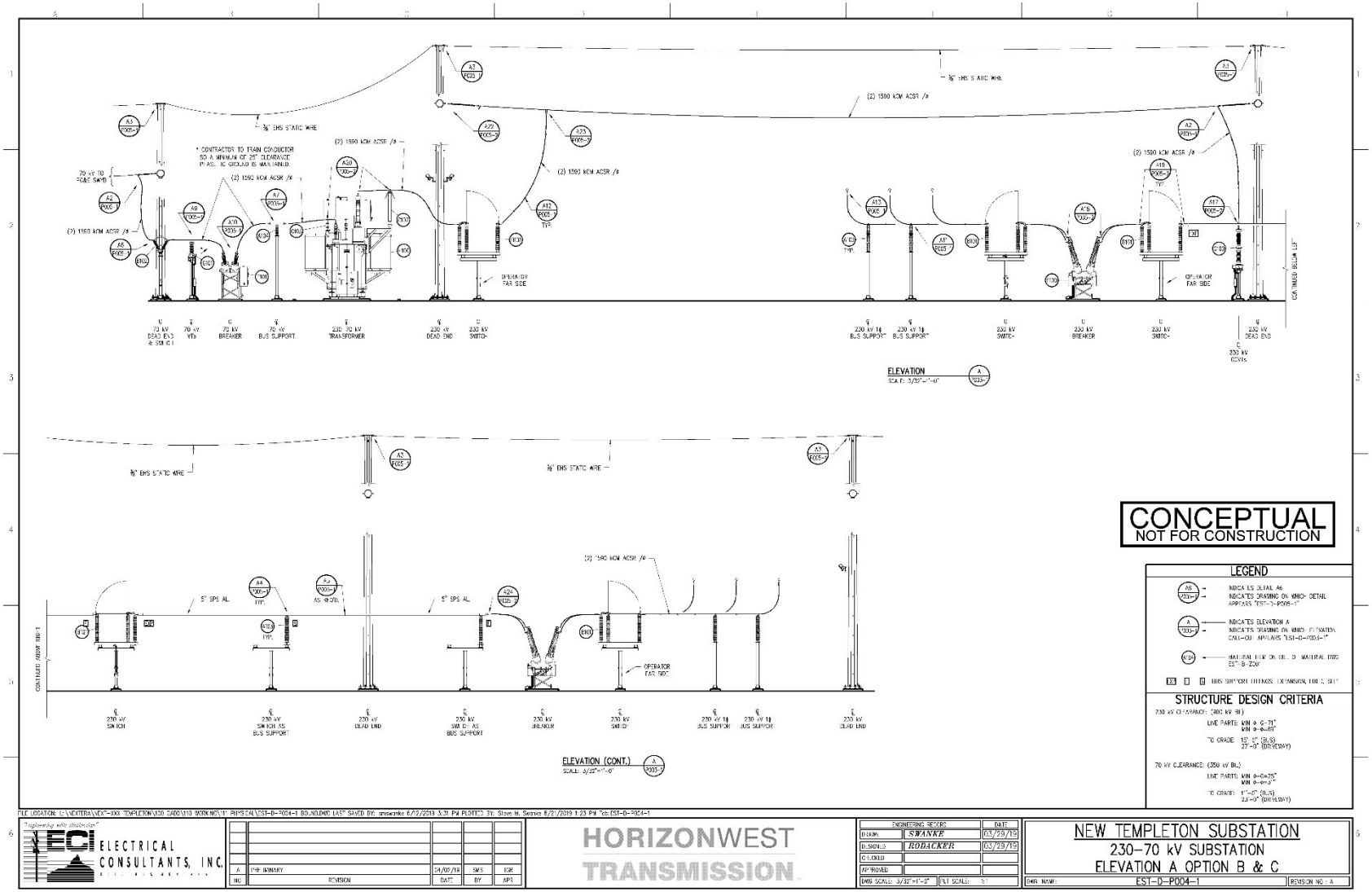


Figure 1-8b. 230 kV Substation Profile View

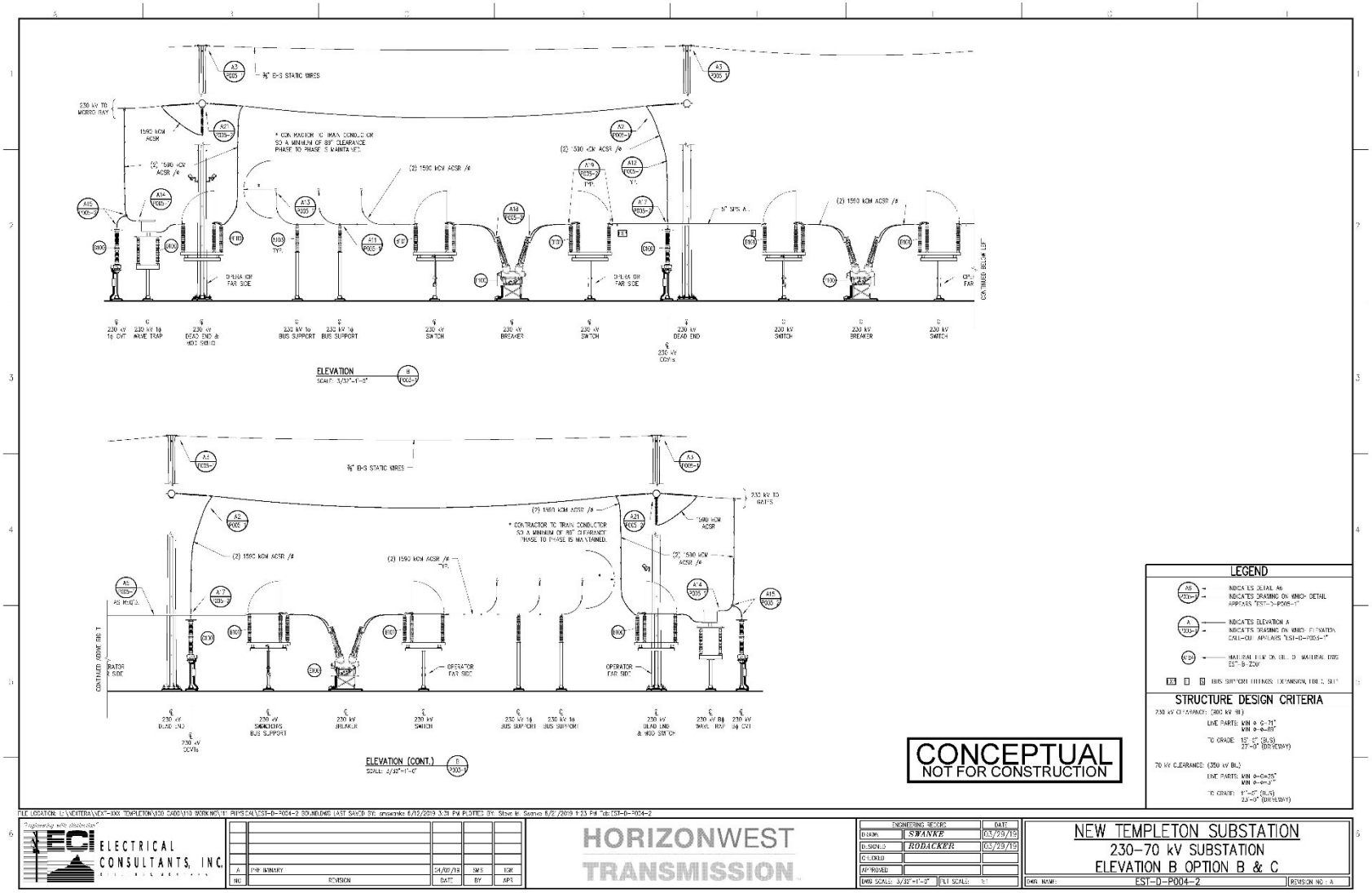


Figure 1-9c. 230 kV Substation Profile View

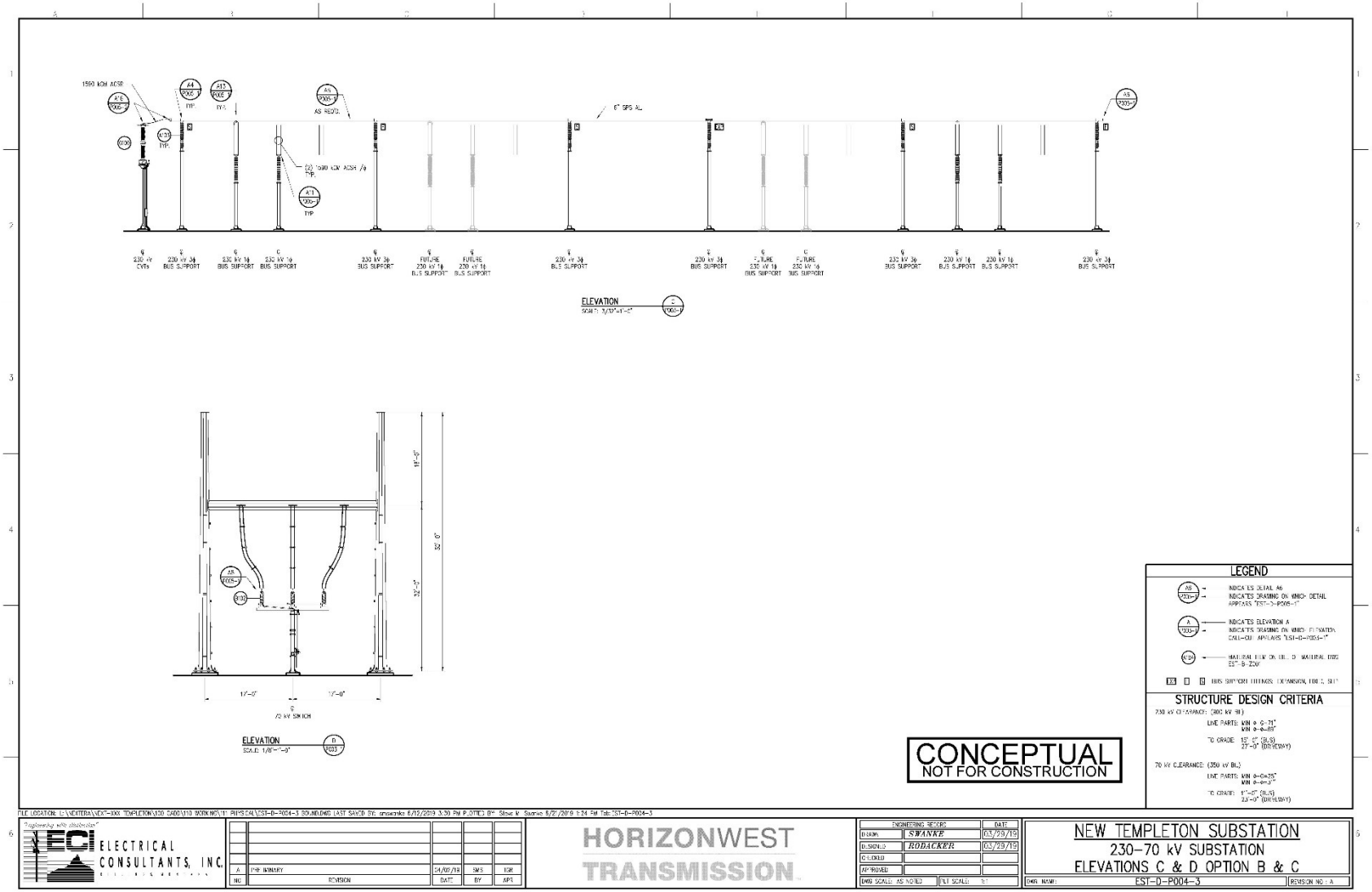
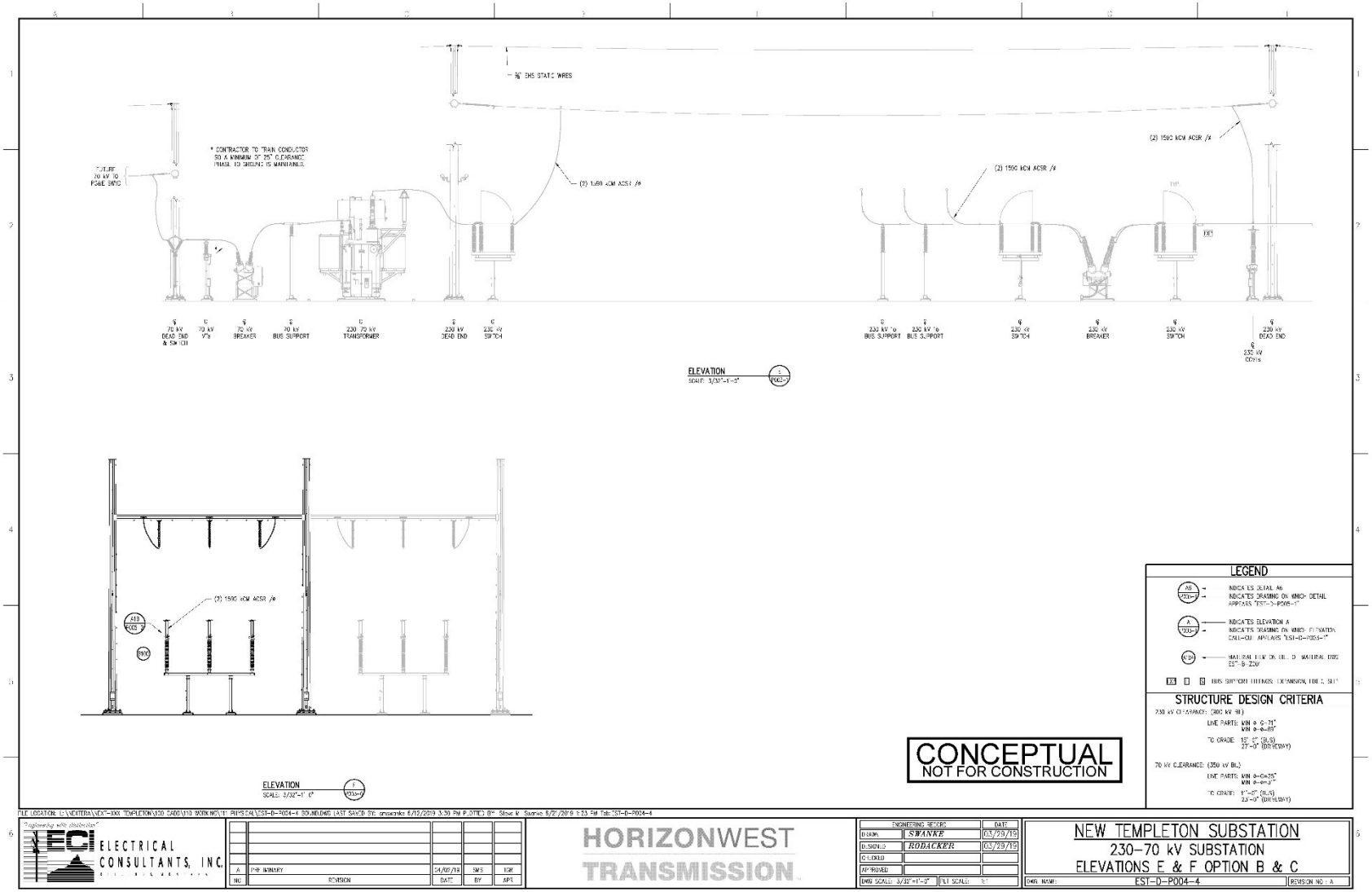


Figure 1-10d. 230 kV Substation Profile View



- Thirteen 230 kV and one 70 kV Group Operated Air Break Switches
- Five 230 kV and one 70 kV Sulphur Hexafluoride (SF_6) Insulated Circuit Breakers
- Eight 230-kV and one 70 kV Dead-end Steel Structures
- Nine 230 kV and three 70 kV Lightning Surge Arresters
- A Protection and Control Enclosure measuring about 48 feet long, 14 feet wide, and 12 feet high would be installed on 10 concrete piers measuring about 11 feet deep. The control enclosure would have redundant air-conditioning units installed to protect electronic components.

In addition to the electrical equipment, the 230 kV substation would include the following infrastructure:

- Lighting and signage
- Telecommunications and distribution feeder line for electrical service
- Secondary containment for transformer oil spill control on applicable equipment
- One spare SF_6 filler tank
- Graveled internal access road
- Perimeter security fencing

The fenced portion of the 230 kV substation would be approximately 3.9 acres in size. An approximately 7-foot-tall chain-link fence with 1 additional foot of barbed wire would be installed around the remaining perimeter of the 230 kV substation.

The maximum amount of mineral oil required for the transformer would be approximately 15,290 gallons. The mineral oil would be utility grade, low-volatility mineral oil. Based on the anticipated volume of dielectric/mineral oil in excess of 1,320 gallons to be used at the 230 kV substation, a Spill Prevention, Control, and Countermeasure (SPCC) Plan would be required, in accordance with Code of Federal Regulations (CFR) Title 40, Parts 112.1–112.7, and would address the project spill prevention and containment design measures and practices. The 230 kV substation would be constructed with secondary containment design in accordance with SPCC requirements for oil containment in the event of a spill. A concrete secondary containment basin would provide mineral oil containment for the transformer, and would be designed to allow sufficient freeboard to include the oil volume of the transformer plus the precipitation from a 25-year, 24-hour storm event. Following a storm event, rainwater collected in the containment area would be visually inspected for any contamination before allowing to drain off-site.

The 230 kV substation would connect to existing power and telecommunications located on an existing distribution pole at the northeast corner of the substation site along the edge of El Pomar Drive and/or from the first 230/70 kV transformer bank to be installed. Electricity would be used for construction (i.e., power construction trailers, lighting, and small hand-held machinery or tools) and operation back-up station service power. The electric power and telecommunication circuits (telephone and T1, either copper or fiber) would be brought to the 230 kV substation on either overhead distribution poles or underground conduits. If overhead, up to three approximately 40-foot-tall wood distribution poles may be constructed between the

existing distribution pole and the 230 kV substation. The poles would be direct embedded up to approximately 6 feet. If undergrounded, the back-up power and communications would be brought into the 230 kV substation using up to three underground conduits.

1.5.1.2 230 kV Transmission Interconnection

The 230 kV transmission line interconnection would be owned and operated by PG&E. It would connect the existing 230 kV transmission line to New Templeton Substation in two separate locations—a northern and a southern interconnection. The 230 kV interconnection structures would be TSPs. A summary of typical transmission structures has been provided in Table 2-1, Project Components, and graphic representations of these structures are included in Figure 2-11, Typical Structure Diagrams.

The northern interconnection into New Templeton Substation would begin with the installation of a new TSP in line with the existing 230 kV transmission line alignment. This TSP would interset in the existing 230 kV conductor. From there, the northern interconnection would continue head southeasterly for approximately 175 feet to a new TSP, continue southeasterly for approximately 360 feet to a new TSP, then continue south across El Pomar Drive for approximately 210 feet to a new TSP. From this TSP, the northern interconnection would head southwesterly, terminating at the easterly 230 kV bus structure within New Templeton Substation.

The southern interconnection would leave the westerly 230 kV bus structure within New Templeton Substation, heading southwesterly for approximately 185 feet to a new TSP. From this structure, the southern interconnection would head northwesterly for approximately 210 feet to a new TSP located on the north side of El Pomar Drive and continue northwesterly approximately 195 feet to a new TSP in line with the existing 230 kV alignment. From this point, the southern interconnection would follow the existing 230 kV alignment approximately 50 feet northeasterly to a new TSP. This final TSP would interset in the existing 230 kV conductor and complete the 230 kV interconnection.

The eight 230 kV interconnection TSPs would each be mounted on one individual concrete pier foundation. These towers would be configured with six non-reflective, gray porcelain or clear glass insulator strings to support three individual conductors. Three conductors would be installed on each side of the towers and would be arranged in a vertical configuration. New TSPs would be configured to carry six individual conductors. The overhead conductor would be attached to the new TSP using non-reflective, gray porcelain or clear glass insulator strings. Structures and conductors would be installed with separation distance and ground clearance in accordance with CPUC General Order (G.O.) 95.

1.5.1.3 70 kV Substation

The 70 kV substation would be owned and operated by PG&E. The proposed configuration of the 70 kV substation is shown in Figure 2-8, 70 kV Substation General Arrangement, and Figure 2-9, 70 kV Substation Profile View. The tallest structures within the 70 kV substation, other than the poles supporting the 70 kV lines, would be the dead-end structures, which are approximately 37 feet high and 28 feet wide.

Figure 1-11**. 70 kV Substation General Arrangement**

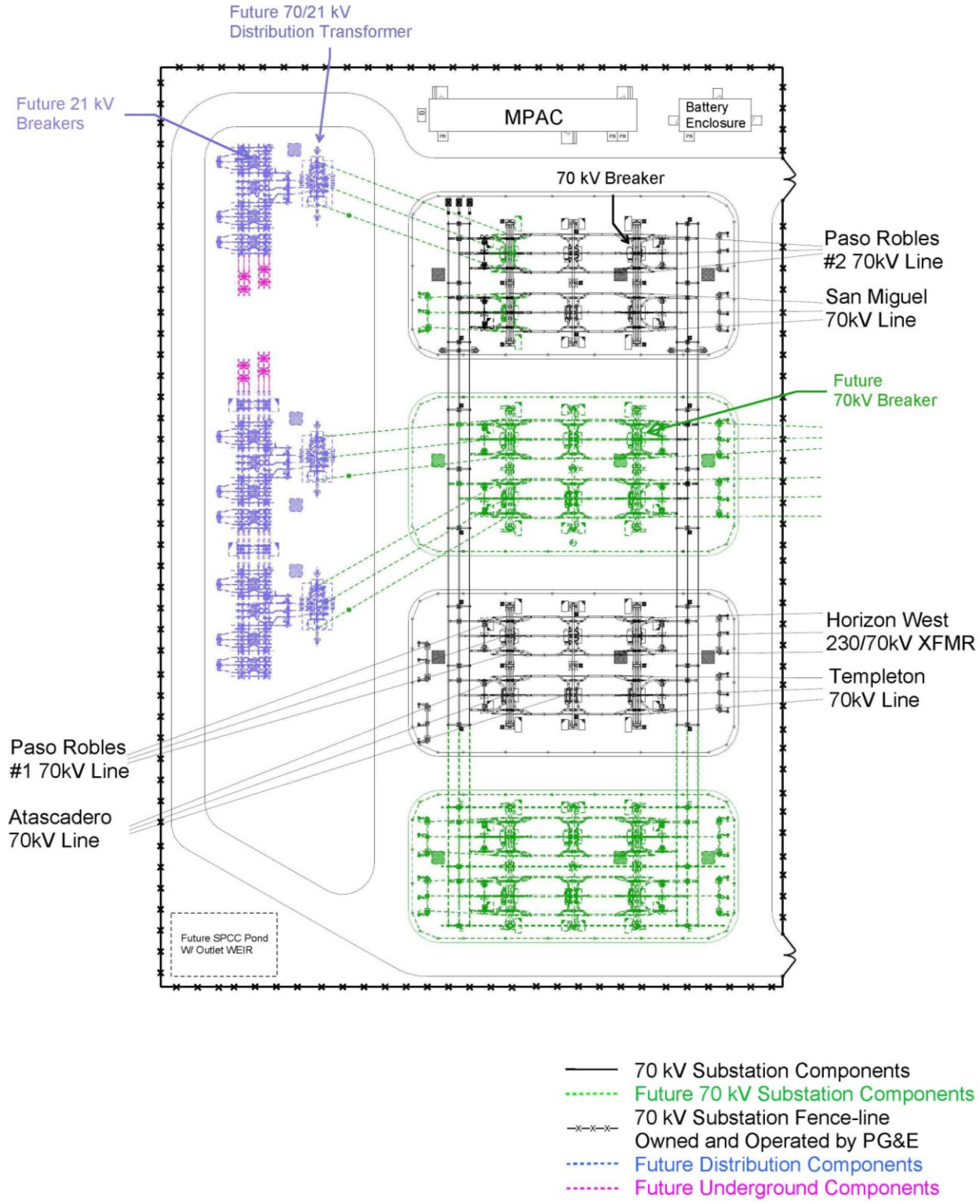


Figure 1-12. 70 kV Substation Profile Viewpoints

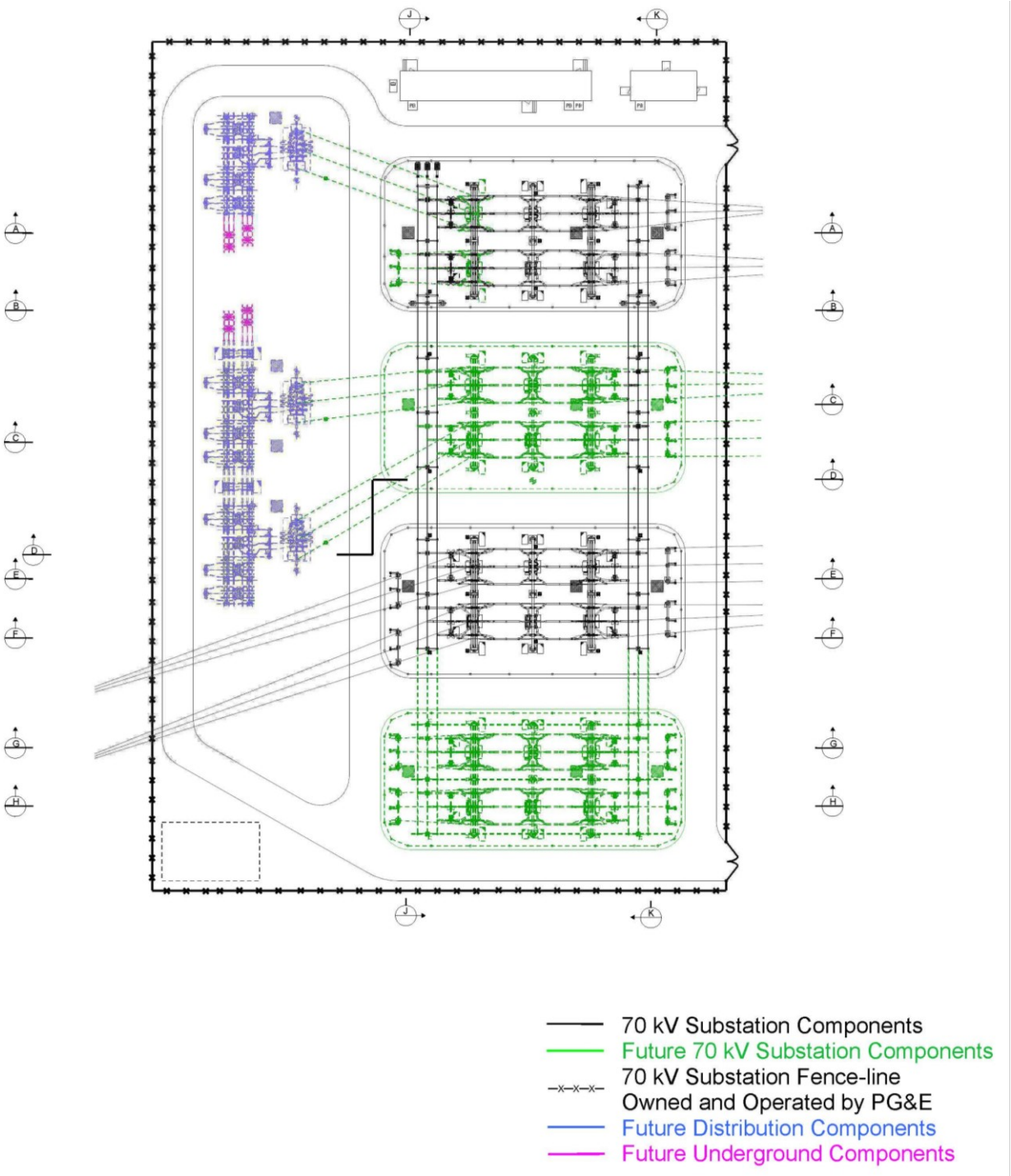


Figure 1-13a. 70 kV Substation Profile View

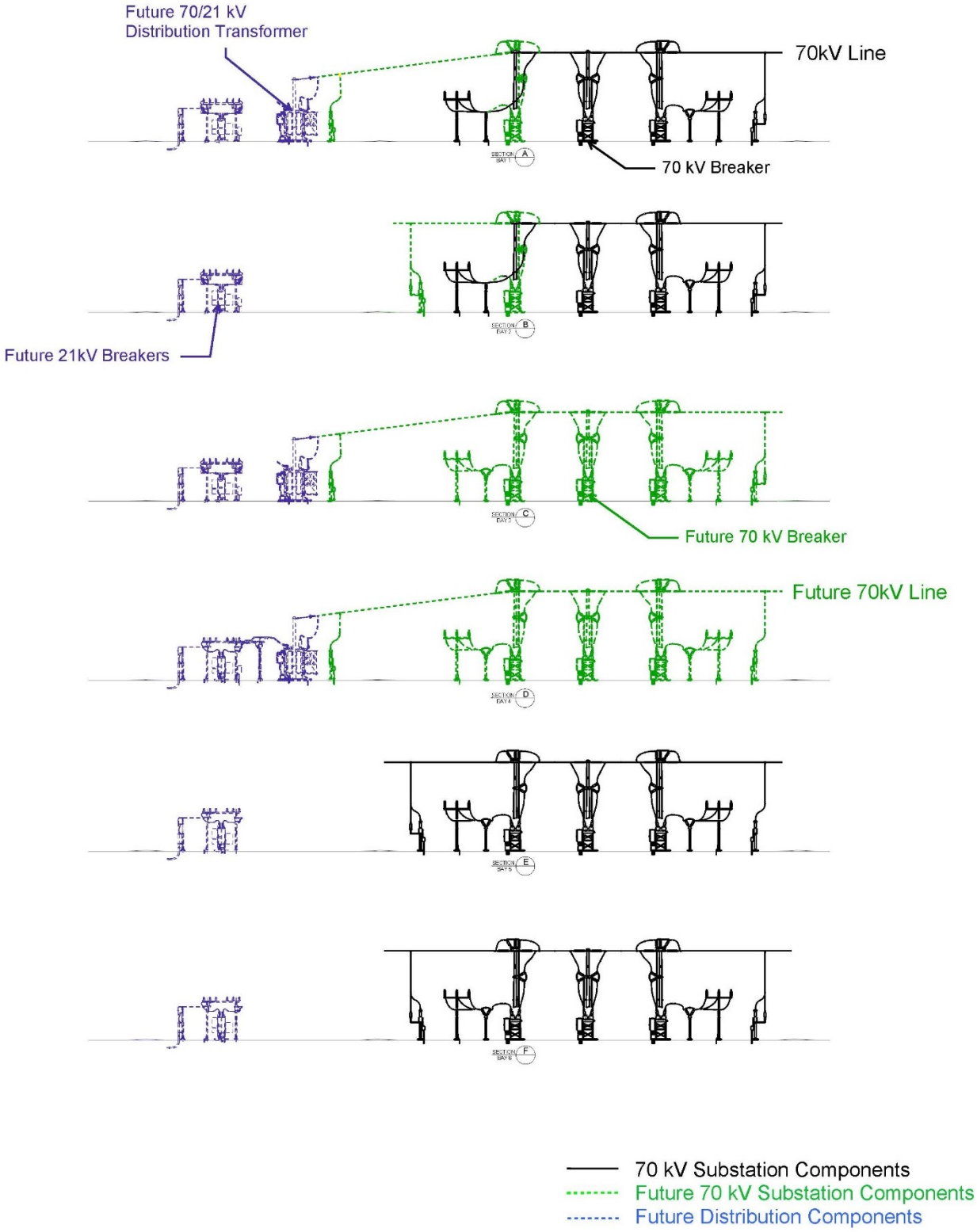
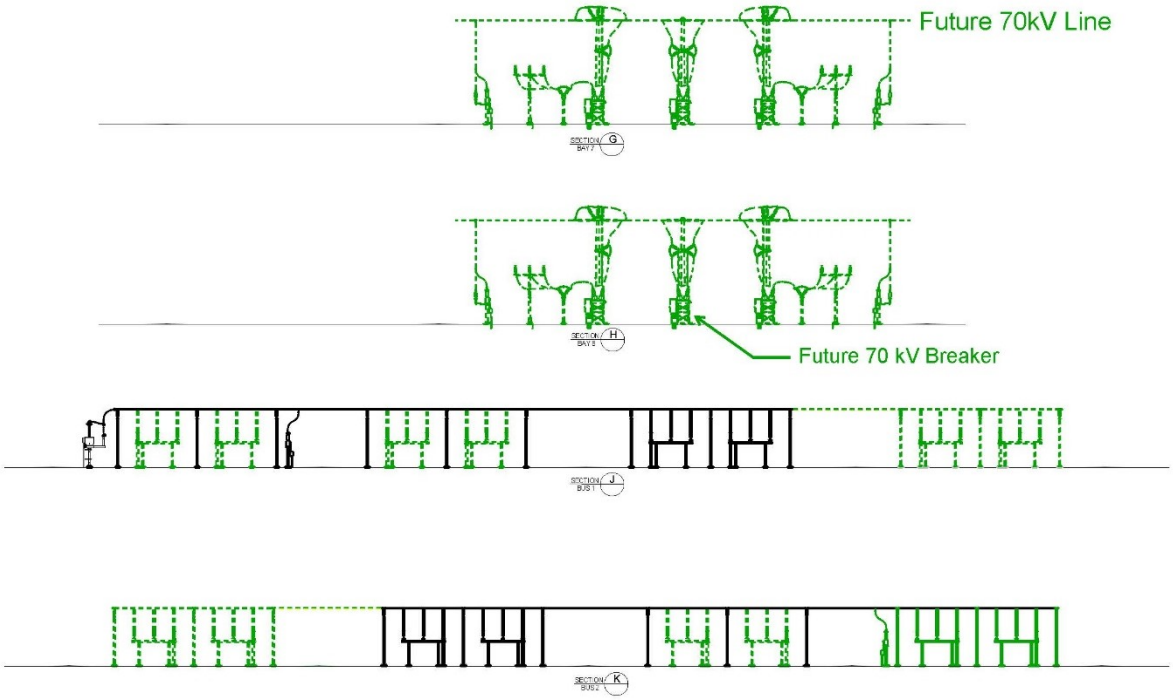


Figure 1-14b. 70 kV Substation Profile View



70 kV Substation Components
Future 70 kV Substation Components

The following major electrical equipment would be located within the fenced area of the 70 kV substation in the proposed configuration:

- Two 70 kV Aluminum Buses
- Six 70 kV Bus Voltage Transformers
- Eighteen Line Voltage Transformers
- Six Station Service Voltage Transformers
- Twenty-six 70 kV Group Operated Air Break Switches
- Ten 70 kV SF_6 Insulated Circuit Breakers
- Six 70 kV Dead-end Steel Structures
- Eighteen 70 kV Lightning Surge Arresters
- A Protection and Control Enclosure measuring approximately 16 feet wide, 98 feet long, and 11 feet tall would be installed on concrete pad measuring about 3 feet deep. The exterior of the control enclosure would have an air-conditioning unit installed to protect electronic components.

In addition to the electrical equipment, the 70 kV substation would include the following infrastructure:

- Dark sky lighting and signage
- Battery enclosure
- Paved internal access road
- Concrete skimmer/weir
- Perimeter security fencing

The fenced portion of the 70 kV substation would measure approximately 2.9 acres within the parcel acquired from HWT. An approximately 8-foot-tall chain-link fence with 1 additional foot of barbed wire would be installed around the remaining perimeter of the 70 kV substation.

The 70 kV substation would not store mineral oil. A concrete skimmer and weir device would be constructed at the southwest corner of the substation. This concrete device settles and collects sediment that is washed down by stormwater before it is discharged from the substation.

The 70 kV substation would have two sources for power—a primary source and a secondary back-up source. The primary source would connect off the 70 kV bus within the perimeter of the 70 kV substation. The secondary power source would be from an existing 21 kV line located along El Pomar Drive. This distribution line may enter the 70kV substation from overhead or underground routes. Depending on the distance from the existing distribution line, PG&E would install either a pole-mounted transformer on an existing or new pole along the existing distribution line along El Pomar Drive or a pad mount transformer located adjacent to the 70 kV substation control enclosure.

1.5.1.4 New 70 kV Tie Lines and Existing 70 kV Power Line Reconfiguration

To connect the new 230 kV and 70 kV substations, a new tie line approximately 350 feet long consisting of approximately two LDSPs/TSPs would be installed. To connect the new 70 kV substation to the existing Templeton Substation, a new tie line approximately 1,060 feet long consisting of approximately four LDSPs/TSPs would be installed.

In addition, the existing 70 kV line between the existing Paso Robles and Templeton substations would need to be reconfigured at the intersection of South River Road and Oak Hill Road to accommodate the new 70 kV power line. Two existing 70 kV poles would be removed from the east side to the of South River Road and two new LDSPs/TSPs would be installed on the west side of South River Road.

1.5.1.5 Future Distribution Facilities

Future distribution facilities would be owned and operated by PG&E. Although future distribution facilities are not part of the alternative, PG&E's 70 kV substation would provide a location for a future 70/21 kV transformer and other 21 kV distribution facilities expected to be needed in the next 5 to 15 years. The proposed configuration of the 70 kV substation with distribution Figure 2-10, 70 kV Substation Profile View with Distribution. The timing of future expansion would be based upon system load demand and reliability concerns, and is not part of this alternative. However, PG&E expects that future distribution facilities would include the following components:

- **Future Distribution Project Components**
    - Installing a new 30 MVA, 70/21 kV three-phase power transformer in the 70 kV substation, to be owned and operated by PG&E
    - Constructing three new 21 kV distribution feeders connecting into the existing distribution system, to be owned and operated by PG&E
    - Reconductoring existing distribution circuits as needed to integrate the new distribution facilities into the existing system

PG&E expects future distribution facilities to include the three new 21 kV feeders as well as approximately 4.35 circuit miles of new or reconductored distribution line on the existing feeder, which is already routed toward the area of anticipated growth north of SR-46.. The new and reconductored line on the existing feeder would be required to clear a route for two of the new 21 kV feeders and to extend the existing feeder capacity further into the anticipated growth area. The first new 21 kV feeder northeast from Templeton—"Templeton 1"—would consist of 15.41 circuit miles of new or reconductored distribution line and a total main-line length of 17.12 circuit miles (including 1.71 circuit miles of existing line). The second new feeder northeast from Templeton—"Templeton 2"—would consist of 10.57 circuit miles of new or reconductored distribution line and a total main-line length of 18.13 circuit miles. The third new feeder northeast from Templeton—"Templeton 3"—would consist of 12.20 circuit miles of new or reconductored distribution line and a total main-line length of 14.60 circuit miles.[1] New

[1] All estimates are based upon preliminary design and subject to change.

overhead distribution lines would typically be supported by 18 poles per mile; therefore, a total of 42.53 miles of new distribution line would require about 766 new wood poles. New wood poles would likely be direct-bury poles (not requiring a foundation) and require approximately 3 square feet of permanent ground disturbance per pole. If pole replacements are required to support the reconductored circuits, they would likely have similar metrics.

1.5.2 Power Line

Power line components would be owned and operated by PG&E. The new 70 kV power line would use a combination of tubular steel poles (TSPs) and light-duty steel poles (LDSPs). LDSPs would have a surface treatment designed to render the appearance of a natural weathering of a wood pole. Typical drawings of each structure type have been included in Figure 2-11, Typical Structure Diagrams.

Power line structures would vary in height depending on their location and purpose, but typically would range between 80 to 90 feet. The approximate distance from the ground to the lowest conductor is 29 feet. Final structure design would incorporate the CPUC's G.O. 131-D requirement for utilities to employ "no cost" and specified "low cost" measures to reduce public exposure to electric and magnetic fields (EMF) in accordance with CPUC Decision 06-01-042 and the "EMF Design Guidelines for Electrical Facilities."[2] In areas where existing metal fences are in close proximity to the power line easement and cannot be replaced with non-conductive fences, wood or composite (fiberglass) poles would be used. These alternative poles may also be used in areas where existing underground utility metal lines are encountered in close proximity to structure locations, such as gas lines.

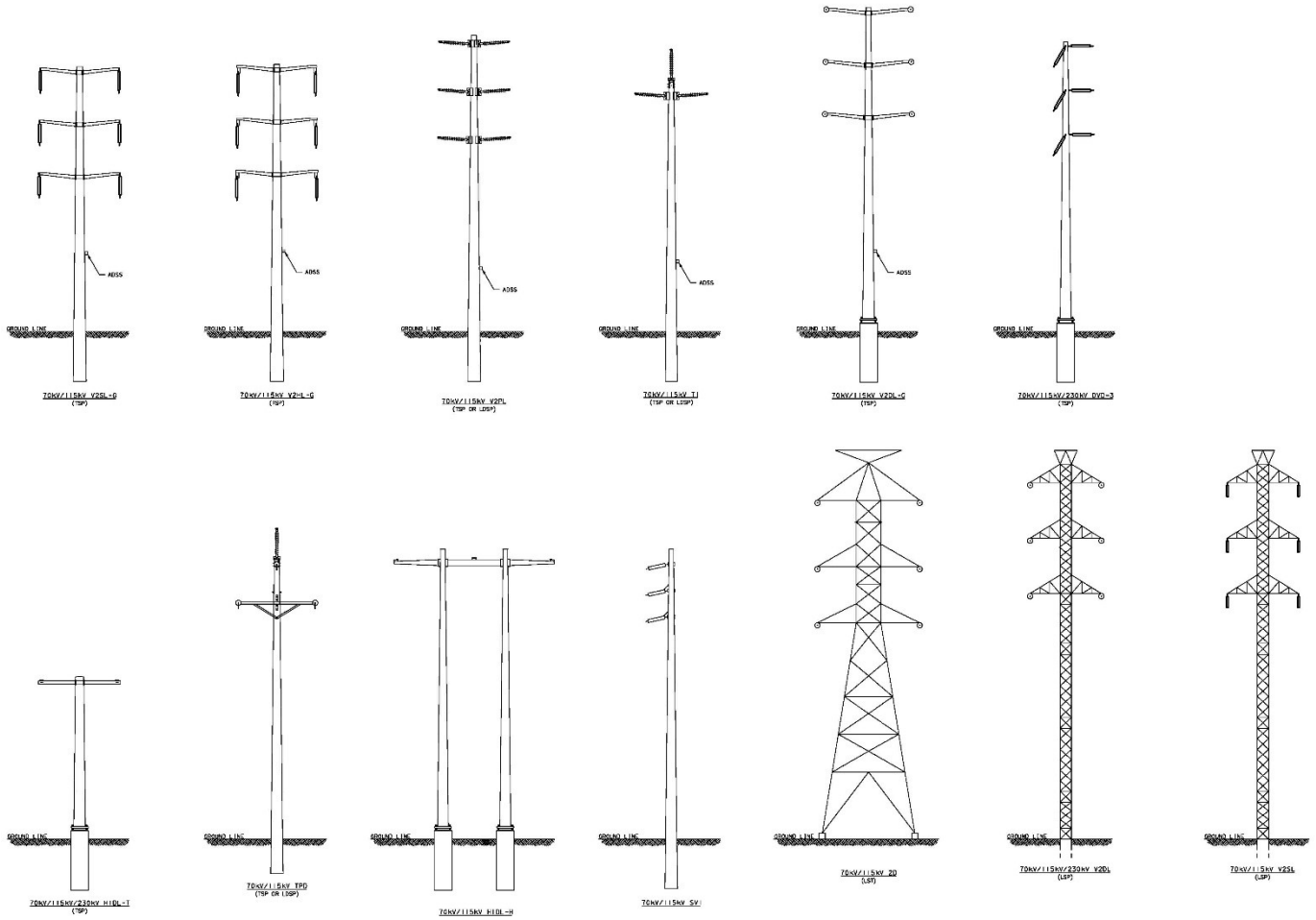
The new 70 kV power line would use overhead aluminum electrical conductors, which, when installed, typically have a shiny surface appearance. This "reflective" or "specular" surface can make a transmission line more noticeable in appearance against the background landscape. The use of specular conductor is proposed for this alternative because it would be visible to birds that fly over the area. Additionally, observations by PG&E and other utilities indicate that specular conductor transitions to non-specular in the course of few seasons after installation. As a result, the new conductor would match similar lines in the area in a relatively short period of time. In the short term, the shinier conductor makes a new line more visible to birds and pilots. The new conductors would be installed to meet or exceed the minimum separation distances and ground clearances in accordance with CPUC G.O. 95 and would meet raptor safety requirements.

A description of the required structures and the associated conductors for the new 70 kV power line is provided below. The project has been designed to conform to the following applicable guideline: *Suggested Practices for Avian Protection on Power Lines: The State of the Art in 2006* (Avian Power Line Interaction Committee [APLIC] 2006).

[2] Although the CPUC has confirmed that EMF issues in a Permit to Construct proceeding are limited to the utility's compliance with CPUC's low-cost/no-cost policies (D.06-01-042, at 21), general background information concerning EMF is provided for public information purposes in Section 2.12, Electric and Magnetic Fields, and Appendix B.

Figure 1-15a. Typical Structure Diagrams[3]

Note: Not to scale. LSTs measure approximately 25 by 25 feet at base. LDSPs have a 3-foot diameter at base and 1-foot diameter at tip. TSPs have a 4-foot diameter at base and 1.5-foot diameter at tip.



[3] The structure designs will be confirmed during the final engineering phase of the project. The structures that are planned for the project are long lead-time items. Alternate structure designs (e.g., lattice steel poles, fiberglass poles, and wood poles) may be substituted based on structure availability, the results of final engineering, and the conditions in the vicinity of the planned structure location.

1.5.2.1 New 70 kV Power Line

The new 70 kV power line would consist of approximately 5.2 miles of double-circuit 70 kV power line on a combination of two types of structures. TSPs would be utilized for the portion of the line that would be installed within the existing PG&E transmission corridor. In general, the TSPs would utilize an average span length of approximately 900 feet. Each TSP would be installed on one individual concrete pier foundation.

The remainder of the new 70 kV power line would utilize TSPs and LDSPs. These structures would typically be used in locations where the new 70 kV power line is not parallel to the existing 500 kV transmission line. TSP structures would be installed generally in locations where the alignment changes direction. The route would utilize an average span length of approximately 380 feet.

Structures along the new 70 kV power line would be configured with six individual aluminum conductors, measuring up to 1.25-inch diameter, and an underhung fiber optic cable, measuring up to 0.75-inch diameter. Three conductors would be installed on each side of the structures and would be arranged in a vertical configuration. The overhead conductor would be attached to the structures using 6 post insulators or insulator strings—3 per circuit—for tangent configurations, and up to 12 insulator strings—6 per circuit—for dead-end configurations.

1.6 EASEMENT REQUIREMENTS

Permanent land and easement requirements for the project components are described in the subsections that follow. Land entitlement issues are not part of this regulatory proceeding, in which the CPUC is considering whether to grant or deny the project proponent's application for a Permit to Construct (PTC) 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 the application.

1.6.1 New Templeton Substation

The parcel of land where New Templeton Substation would be constructed is under private ownership. Prior to construction, HWT would purchase and hold fee title of an approximately 19-acre area. This area is adequate to accommodate the entire substation facility including all considerations for site grading, equipment laydown and storage, fencing, access and internal circulation, spill and stormwater management, and other operational considerations. Once all of the environmental permits from the applicable siting and regulatory agencies have been obtained and grading and drainage has been constructed for the entire substation site, HWT would sell PG&E the land necessary for construction of the 70 kV substation and 230 kV interconnection.

Three TSPs associated with the 230 kV interconnection would be installed within the existing transmission line easement. Five additional TSPs would be used to complete the interconnection. A new approximately 75-foot-wide easement would be acquired for the three TSPs that would be installed on a private parcel north of El Pomar Drive. Two TSPs would be installed on the parcel that would be acquired for the development of New Templeton Substation.

The telecommunications system extension would be installed within New Templeton Substation, Paso Robles Substation, PG&E's existing transmission corridor, the easement obtained for the 230 kV interconnection, and the easement obtained for the new 70 kV power line.

1.6.2 Power Line

New easement would be acquired for the majority of the new approximately 5.2-mile-long 70 kV power line, up to 115 feet wide with varying widths based on the location of the new power line. When on private property, the easement would typically be 70 feet wide, and the poles would be located in the center of the easement (35 feet on each side). In locations where the poles would be adjacent to a county or city road franchise, new poles may be located on private property ranging from 2 to 7 feet outside of the road franchise, so the easement would be 2 to 7 feet on one side and 35 feet on the other. There may be some locations where the pole line may be located within the road franchise.

1.6.3 Future Distribution Facilities

Future distribution substation equipment would be located within the 70 kV substation, with three distribution feeders extending from the distribution transformer to connect with existing distribution lines. A new 30-foot-wide easement, up to approximately 42.53 miles in length, would be obtained to connect the future distribution facilities to existing distribution feeders near the area of anticipated growth north of SR-46 where the new distribution lines cannot be placed in existing easements.

1.7 CONSTRUCTION

Construction of the project components would proceed as described in the following subsections. Prior to initiating construction, the project proponents would contact the Underground Service Alert, also known as USA North 811, to identify underground utilities in the immediate area. A summary of the temporary disturbance areas and anticipated site preparation is provided in Table 2-2, Temporary Disturbance Area Summary.

Table 1-2. Temporary Disturbance Area Summary

Location	Anticipated Site Preparation	Total Approximate Area (acres)*
New Templeton Substation		
Substation Work Area**	Vegetation removal and grading, including grape vines (and roots) and grasses.	25.2
Power Line Route		
Pole Work Areas***	Vegetation removal and minor grading may be required.	34.9
Crossing Structure Work Area	Vegetation removal may be required.	1.1

Table 1-2. Temporary Disturbance Area Summary

Location	Anticipated Site Preparation	Total Approximate Area (acres)*
Pull Sites	Vegetation removal may be required.	8.5
Access Roads	Existing unpaved roads may be improved within the existing road. Improvements include minor grading/blading and the placement of dirt and/or gravel.	3.8
Staging Areas****	Vegetation removal may be required, temporary fencing and gates would be installed, gravel would be installed, and temporary power would be supplied by a distribution tap or generator.	32.5
Landing Zones	Sites would be leveled free of obstacles and debris.	1.3

Notes: This table is preliminary and subject to change based on CPUC requirements, final engineering, and other factors. Construction of the telecommunications system extension would also be conducted within temporary disturbance areas identified.

* Acreage totals do not account for overlapping work areas and do not include the future distribution feeders. Construction of the future distribution feeders may require limited vegetation removal.

** Includes substation staging area.

*** Includes TSPs, LDSPs, and existing and new distribution poles.

**** The primary staging area may be replaced with an approximately 10-acre staging area located on Paso Robles Municipal Airport property.

1.7.1 Temporary Work Areas

Temporary work areas to facilitate specific construction activities are described in the following discussions. During construction of the project, holes and excavation pits would be covered for safety reasons (such as by using a steel plate or solid piece of plywood to prevent wildlife from entering the hole and protect people from falls). Precise locations for temporary work areas would be determined as part of the final design and may be changed, as necessary, at the time of construction due to land use changes, unanticipated impacts, and other factors. Unless specified in the subsections that follow, all work areas would be accessed from adjacent paved roads, unpaved roads, or site-specific overland access routes. In some locations, work areas may be accessed by footpaths if conditions preclude the use of vehicles. Section 2.8.2, Project Access, provides a more detailed description of the planned project access to the various project components. Following construction, all sites would be restored as described in Section 2.8.4, Cleanup and Restoration.

1.7.1.1 Staging Areas

Three staging areas would serve as the main base of operations during project construction. The staging areas are summarized in Table 2-3, Potential Staging Area Summary. The New Templeton Substation site would include one distinct staging area during construction that would be used for receiving, staging, laydown areas, and construction worker parking. PG&E has preliminarily identified two additional areas for potential use during power line construction,

including a primary staging area located in the center of the route. Staging areas may be relocated or adjusted as necessary at the time of construction due to land use changes, unanticipated impacts, and other factors. PG&E may also elect to use existing PG&E substations and other PG&E-owned facilities as staging areas.

Table 1-3. Potential Staging Area Summary

Potential Staging Area*	Estimate Total Size (acres)
New Templeton Substation	
Templeton Staging Area	6.8
Power Line Route	
El Pomar Drive Staging Area**	28.2
South River Road Staging Area	4.3

Notes: This table is preliminary and subject to change based on CPUC requirements, final engineering, and other factors.

* Construction of future distribution facilities is not expected to require additional staging areas, since the 70 kV substation would have been prepared for the facilities and distribution feeders follow existing roadways.

** The primary staging area may be replaced with an approximately 10-acre staging area located on Paso Robles Municipal Airport property.

Staging areas would be the assembly point for project personnel, as well as the location for temporary, portable bathroom facilities; equipment storage during off-work hours and weekends; materials storage; employee parking; office trailer staging; and a meeting area, as needed, for project management.

The substation staging area would be the main base of operations during construction of the 230 kV and 70 kV substations. The staging area also would be used to support construction activities associated with the 230 kV interconnection. All construction equipment and vehicles associated with the substation would be parked within the substation work areas at the completion of each workday, where practical. If nighttime work is necessary in the work areas, temporary lighting would be situated and directed away from any adjacent residences.

The primary staging area for construction of the power line would be located along El Pomar Drive in a nonnative grassland area and would occupy approximately 28.2 acres. A second staging area is located in Blue Oak Woodland at a residential and cattle grazing site and is located adjacent to South River Road just south of the City of Paso Robles limits. This staging area would total approximately 4.3 acre. Final staging area sizes would vary depending on negotiations with third-party property owners to establish the staging area's temporary construction easements. If not already provided, in-ground chain-link fencing would be installed around the perimeter of the staging areas for security purposes.

For work activities at the staging sites, a temporary overhead service drop (tap) or an underground service (run) would be extended to the sites to provide power if existing distribution facilities are present. If a distribution service from nearby distribution lines is not feasible for the staging area sites, these areas could receive power from temporary, portable generators.

Preparation of the staging areas would take approximately 4 weeks to complete and would include the following actions and improvements:

- Site leveling and grading;
- Installation of temporary in-ground fencing (if not already present), including 6- to 8-foot-tall chain-link fence, with up to 2 feet of barbed wire around the perimeter of each staging area with locking gates to control access;
- Placement of gravel or equivalent material within staging area to control dust, sedimentation, equipment track-out, and prevention of stormwater runoff leaving the site during rain events;
- Installation of temporary power from portable generators and/or taps to existing distribution lines in the area; and,
- Installation of necessary construction office trailers, sanitary facilities, and storage buildings.

Prior to use, each staging area would be prepared to allow for the safe operation of construction equipment and vehicles. Because previously disturbed and flat areas would be selected as potential sites, it is anticipated that minimal grading or other preparation would be required. If the selected sites are not comprised of a solid earth or concrete/paved foundation, any weeds would be cleared.

1.7.1.2 Structure Work Areas

Structure work areas would be established at each new tower/pole that would be installed as part of the project. These work areas would be used to facilitate the tower/pole assembly, erection, and hardware assembly processes. They would also be used to support the conductor installation and/or removal processes. The final tower/pole locations would be determined when engineering is complete and, where feasible, would be adjusted to account for property owner preferences. Structure work areas may also be adjusted to accommodate the final tower/pole locations.

These work areas would typically be centered on the tower/pole location, and would vary in size depending on the type of tower/pole being installed. Typical work areas are about 100 by 100 feet for LDSPs, 150 by 150 feet for TSPs, and 200 by 200 feet for LSTs. These work areas may be cleared of vegetation and graded, if necessary, prior to their use. Some sites may also require tree trimming, tree removal, and/or vine removal. Work areas for existing distribution poles would typically be about 50 by 50 feet.

1.7.1.3 Crossing Structures

Prior to the installation of new conductors, temporary crossing structures—typically consisting of either vertical wood poles with crossarms or staged construction equipment—would be installed or mobilized at crossings of energized electric lines, communication facilities, and/or major roadways to prevent the conductors from sagging onto other lines or roads during removal or installation. To accommodate the installation of a crossing structure, PG&E would establish a work area measuring about 40 by 40 feet at each required crossing. Additional ground disturbance is not anticipated, but may be required in areas of steeper terrain. Preparation of the site would typically be limited to mowing vegetation, as needed, to minimize the risk of fire. Crossing locations would be determined during final design.

Netting may be used if required by a city, county, or state agency for crossing over roads. A crossing structure would be installed on both sides of the road and netting would be strung between the structures. PG&E would work with the appropriate regulatory agencies prior to the installation and construct it according to the encroachment permit requirements.

1.7.1.4 Pull and Tension Sites

Pull and tension sites, also known as stringing sites, would be used to install conductor on support structures. Conductor installation activities at stringing sites would include pull and tension equipment staging, temporary pole anchor installation, and pulling and tensioning of the conductor. In addition, selected pull sites may provide the necessary work area needed for telecom-related activities. Specific pull-site locations would be determined during final project design.

Pull sites would typically be located within the power line easement and can be spaced between 1.1 and 1.6 mile apart. In locations where pulling would be required through an angle, or at the start of a new direction of the alignment, the pull site may be located at an angle outside the easement or off the end of an easement corner. Pull sites would range between approximately 70 and 230 feet wide and approximately 250 and 1,000 feet long. Each stringing site would require about 2.1 acres.

Typical equipment required for pull and tension sites includes pullers, tensioners, cranes, crawlers, water trucks, crew cab trucks, and pickup trucks. Construction crews would access pull and tension sites using rubber tire mounted trucks. Access may be required throughout the easement, away from structure work areas and pull sites, to support pull and tension activities.

All pull sites located outside of paved areas may require vegetation trimming/removal to minimize the risk of fire and, depending on the local terrain, some minor grading may be required to ensure a flat and safe work environment. Depending on the time of year and field conditions at the time of construction, gravel may be applied to help stabilize the ground for equipment use.

Conductor and cable stringing operations would occur project wide and typically begin with installation of travelers or “rollers” using bucket trucks. Following installation of the rollers, a sock line (a small cable used to pull the conductor) is pulled onto the rollers from structure to structure. Necessary guard structures would be installed to protect any power line crossings along the work path. Once in place, the sock line is attached to pull or “string” the conductor

into place on the rollers using conventional tractor-trailer pulling equipment located at the pull and tension sites along the line route.

Once the conductor is pulled to a pre-calculated tension, the conductor is then clipped into the end of each insulator, the rollers are removed, and vibration dampers or other accessories are installed. The anticipated maximum distance for any "wire pull" may be 3.2 miles of conductor line; however, many pull sections along the route would traverse less distance.

1.7.1.5 Landing Zones

Landing zones may be used during construction for the staging, storage, refueling, and operation of helicopters during construction. The location of these landing zones may change depending on site conditions at the time of construction, and alternative sites that could serve as landing zones have been identified. Other sites within the alternative area, such as the staging areas, could also serve as landing zones, if needed. Two landing zones have been preliminarily identified for use during the project:

- Landing Zone 1: Paso Robles Municipal Airport;
- Landing Zone 2: New 70 kV power line site northwest of Neal Springs Road and southwest of Hanging Tree Road.

The non-airport landing zone would be approximately 1.3 acre, with a 30- by 30-foot touchdown pad area. Because the identified landing zones are comprised of an airport and one disturbed area within the project area, these landing zones would not require extensive preparation. A more detailed description of helicopter use during construction is provided in Section 2.8.2.3, Helicopter Access.

1.7.2 Project Access

Construction crews, materials, and equipment would primarily access the project site by using U.S. Route 101, and by either traveling along Vineyard Road, El Pomar Drive, Neal Springs Road, South River Road, or Niblick Road. In addition to using a system of existing roads, project proponents may also grade or mow new temporary unpaved roads, or travel overland to provide access to New Templeton Substation and/or pole locations along the new 70 kV power line. Access to the work sites for workers and equipment would occur using rubber tire-mounted vehicles.

Some poles may also be accessed on foot if sensitive resources preclude the use of heavy equipment. For roads that require improvements for access and equipment delivery, grading could be conducted, if necessary, followed by the addition of temporary rock bedding. Equipment required for this work may include a grader, dump truck for gravel delivery, and a loader or tractor to spread rock.

Minor adjustments to access may be necessary at the time of construction due to land use changes, unanticipated impacts, and other factors. Work along the new 70 kV power line would occur from the road shoulder, where feasible. As a result, access roads may not be required in these locations.

An overview of the access roads that are currently planned to be used during the construction of the project is provided in Table 2-4, Project Access Summary. Additional access requirements by project component are described in the subsections that follow.

Table 1-4. Project Access Summary

Type of Road	Project Component to be Accessed*	Road Surface/ Improvements	Approximate Width (feet)	Approximate Length (feet)	Total Approximate Area (acres)**
Existing Unpaved	Power Line Route	Unpaved roads may be improved within the existing road prism. Improvements may include minor grading/blading and the placement of dirt and/or gravel.	15	10,930	3.8
New Permanent	New Templeton Substation	Paved main access road and paved or graveled interior access roads	16-20	4,930	2.3
	Power Line Route		12-20	16,790	5.0

Note: This table is preliminary and subject to change based on CPUC requirements, final engineering, and other factors. Access to the staging yards/landing zones have been included in the project component that the site is designed to support.

* Construction of future distribution facilities is not expected to require additional access, since the 70 kV substation would have access and distribution feeders follow existing roadways or existing utility lines.

** Acreage totals do not account for overlapping work areas.

*** Overland routes would generally be approximately 12 feet wide, but may be expanded to approximately 15 feet around corners to allow safe access for construction equipment.

1.7.2.1 New Templeton Substation

Permanent and construction access to the proposed substations would be immediately off El Pomar Drive on a new private access road. The main access road would be paved and measure about 985 feet long and about 20 feet wide. Interior roads within New Templeton Substation would measure, in total, approximately 3,945 feet long and about 16 feet wide.

Construction access for the proposed 230 kV interconnection would occur using an existing unpaved access roads along the vineyard and new unpaved access roads through the vineyard.

1.7.2.2 Power Line Components

Access to the new 70 kV power line would be provided by paved public roads, where feasible. Existing unpaved, private access roads and driveways, and new unpaved access routes, would be used to supplement the existing paved roads.

1.7.2.3 Helicopter Access

Light-duty and medium-duty helicopters with a maximum payload capacity of approximately 4,000 and 10,000 pounds may be used to assist with the installation of new poles in areas along the power line where limited access or local terrain conditions prohibit the work from being conducted by ground-based crews and equipment. A helicopter may also be used during conductor installation and removal activities. It is anticipated that only one helicopter would be used at any one time.

As described in Section 2.8.1.5, Landing Zones, up to two landing zones would be established as needed for the staging and refueling of the helicopters. Typical helicopter payloads would include, but not be limited to, poles, sock lines, power line hardware, crewmembers, and equipment. Use of staging areas for landing zones would be confirmed during final design and are dependent on final pole locations, pole type and size, and available site access. Refueling activities would occur only at the Paso Robles Municipal Airport.

Flight paths for helicopters would be from the Paso Robles Municipal Airport, and would generally extend directly to and along the power line easement. Helicopter operation would be planned to avoid sensitive receptors. Hours of operations for helicopters would generally be the same as those for construction, 7:00 a.m. to 5:30 p.m., Monday through Friday, and would include Saturdays when needed. In some cases, residents may need to relocate from their home temporarily during helicopter activities. Additionally, helicopter use would be in accordance with all applicable federal, state, and local aviation rules and regulations.

Within the new 70 kV power line, several poles may be hand dug and helicoptered in. The project proponents would implement best management practices to reduce potential impacts to air quality, hazards and hazardous materials, and noise. For example, helicopter flight paths generally would be limited to the existing power line easement and project-specific landing zones. Additionally, helicopter use would be in accordance with all applicable federal, state, and local aviation rules and regulations.

1.7.3 Vegetation Clearance

Construction of New Templeton Substation would result in the permanent removal of approximately 19 acres of grasslands. Approximately three heritage oak trees would be removed.

Existing vegetation would need to be temporarily cleared or mowed to establish access roads and routes, as well as clear staging areas, landing zones, and work areas for construction activities. Much of this vegetation is in previously disturbed areas. Mowers, excavators, front-end loaders, and bulldozers would be used to clear these sites. During clearing activities for temporary disturbance areas, vegetation would be mowed or grubbed, leaving root systems intact wherever possible to encourage resprouting and to minimize erosion. Brush and shrubs cleared during

construction may be disposed of at an approved organics processing facility in the project vicinity or chipped and left on-site.[4]

Temporary and/or permanent impacts to oak trees would occur from tree trimming/vegetation removal activities required under G.O. 95, Section III to maintain minimum clearances required and to prevent dead, rotten, or diseased portions of otherwise healthy trees from falling onto a power line. Additionally, Section 10.01.065 of the City of El Paso de Robles' (City) Oak Tree Ordinance (Ordinance No. 835 N.S.) permits oak tree trimming by public utilities subject to the jurisdiction of CPUC, as necessary, to maintain a safe operation for facilities.

Construction of the project would involve ground-disturbing activities, including grading and vegetation clearing. As a result of these activities, which would total more than 1 acre, the project proponents would obtain coverage under the State Water Resources Control Board (SWRCB) General Permit for Storm Water Discharges Associated with Construction Activity Order No. 2009-0009-DWQ, as amended. To obtain coverage under the permit, the project proponents would develop and submit Permit Registration Documents—including a Notice of Intent, a Storm Water Pollution Prevention Plan (SWPPP), a risk assessment, a site map, certification, and an annual fee—to SWRCB prior to initiating construction activities.

In conjunction with the SWPPP, appropriate best management practices would be developed for each activity that has the potential to degrade surrounding water quality through erosion, sediment run-off, and other pollutants. These best management practices would then be implemented and monitored throughout construction of the project by a Qualified SWPPP Practitioner.

Small, temporary stockpiles of excavated dirt may be located near excavations for the power line structures and/or their foundations. This excavated material would be used, as appropriate, for backfilling voids left by the removal of guard structures, old power line poles, and old distribution poles. Sediment control best management practices, such as the use of fiber rolls around stockpiles and excavated areas, would be implemented to manage the temporary stockpiles.

Construction debris would be transported to a staging area or PG&E Service Center, as needed, for recycling or disposal. Wood poles removed for the project would either be taken to a staging area or area Service Center collection bin for transport with other materials for disposal to a licensed Class 1 landfill or a composite-lined portion of a solid waste landfill, or reused if the poles meet pre-established criteria for reuse. PG&E would comply with all laws and regulations regarding the disposal of the existing wood poles.

New Templeton Substation would be designed to maintain existing drainage patterns and would include erosion control design measures for site stabilization. The SWPPP would include measures to limit erosion and off-site transport of pollutants from construction activities. The SWPPP would identify best management practices that would be followed during construction to help stabilize disturbed areas and reduce erosion, sedimentation, and pollutant transport. No

[4] Paso Robles Waste & Recycle has been identified as a potential disposal facility for brush and other cleared vegetation.

dewatering is anticipated during construction of the substation, as the project boundary area does not contain any existing water feature.

During construction, petroleum-based products such as gasoline, diesel fuel, crankcase oil, lubricants, and cleaning solvents would be used to fuel, lubricate, and clean vehicles and equipment, and would be transported in specialty trucks or in other approved containers. When not in use, hazardous materials would be properly stored to prevent drainage or accidents. Additionally, appropriate best management practices would be implemented to minimize the effects of an accidental spill, such as the presence of spill kits in active work areas, to prevent materials from draining onto the ground or into drainage areas. Proper procedures describing hazardous material use, transport, storage, management, and disposal protocols would be identified and implemented in a Hazardous Materials and Waste Management Plan prior to the commencement of construction activities. An SPCC Plan would be required for the 230 kV substation, in accordance with federal regulations, and would address the project spill prevention and containment design measures and practices.

1.7.4 Cleanup and Restoration

Surplus material, equipment, and construction debris would be removed at the completion of construction activities. All man-made construction debris would be removed and recycled or disposed of at permitted landfill sites, as appropriate. Cleared trees would be chipped and stored for later use during site restoration, left on the property owner's site, or disposed of off-site, depending on landowner and agency agreements.

All areas temporarily disturbed by the project would be restored to the extent practicable, following construction. These disturbed areas include staging areas and access roads, areas around each tower/pole, and areas used for conductor stringing and staging. Post-construction restoration activities would include returning areas to their original contours and drainage patterns in accordance with SWPPP best management practices and as prearranged landowner agreements, where applicable.

All temporarily disturbed areas within and around New Templeton Substation would be restored to the extent necessary for safe operation. All construction waste would be disposed of in accordance with all applicable federal, state, and local laws regarding solid and hazardous waste disposal through transport to an authorized landfill.

1.7.5 Substation Construction

1.7.5.1 Substation Grading and Site Preparation

Construction of the substation would follow a typical sequence beginning with survey marking of staging areas and work areas, establishment of the private access road, vegetation clearance, fencing installation, grading, installation of swales, excavation of foundations, installation of facilities, and cleanup and post-construction restoration. Vegetation removal would be limited to areas within survey-marked boundaries, and would be completed utilizing mechanized equipment. To the extent practical, removed vegetation may be diverted for landfill disposal. Site construction fencing would be installed during the site preparation stage, and would require digging to a depth of 4 feet to install fencing anchors.

Generally, grading and excavation for the project would be accomplished in a phased approach. Earthwork activities (e.g., grading, excavation) would be completed to meet project design specifications and match proposed grades, and consider the geotechnical conditions at the site. Maximum excavation depths would occur on the transmission portion of the site and at the steel dead-end structures in the 230 kV substation.

In the event there are areas where bulldozers and backhoes are not able to remove the soil material, scraping, ripping, drilling, hammering, and cutting may be used to break up the material into manageable pieces. Blasting is not anticipated.

During earthwork, soils and other surficial deposits that do not possess sufficient strength and stability, and/or resistance to erosion to support structures, would be removed from the work area. No contaminated soils are expected on this site due to the long-term grazing use of the site. All clean spoils excavated for the project would be used on-site to balance cut and fill calculations, as feasible. All spoils that are not useable and/or contaminated would be sent to a properly licensed landfill facility. All recyclables would be taken to a licensed recycle facility, and all refuse would be taken to the Paso Robles Landfill or other suitable landfill facility.

Material that requires processing for construction of New Templeton Substation would be mechanically processed on-site to achieve a maximum particle size and distribution suitable for conventional placement in engineered fills. In addition to general earth-moving quantities, approximately 6 inches of surface gravel would be required to be imported and installed within the substation footprint and along the access road. Additionally, gravel would be placed in the substation staging areas.

1.7.5.2 Below-Ground Construction

Following site preparation, construction of the substation equipment foundations (consisting of drilled pier, mat, and pad type foundations), underground ducts, and the grounding grid would commence. Foundation construction excavation would be accomplished primarily by backhoes and drill rigs. Forms, reinforcing steel, and concrete would then be installed, as appropriate, to build the foundations for substation equipment and the control enclosures. Structure and equipment foundations would be excavated to an approximate depth of between 10 and 25 feet. Actual depths would depend on the equipment to be installed. Concrete pouring would be required to construct the foundations. Underground bundled polyvinyl chloride (PVC) conduit ducts would be constructed within the substation pad for the control circuits.

1.7.5.3 Above-Ground Construction

Power lines and distribution circuits would be connected inside the substation after substation structures and equipment are installed. Control and protection wiring would be completed during above-ground structure installation. All equipment would be tested after installation and wiring, and before placing the substation in service. Equipment would be placed in service once individual power lines and circuits are ready to be energized and have been tested outside the substation.

It is anticipated that all major electrical and substation equipment would be delivered to each substation site and placed directly on constructed concrete foundations and footings. Once all

footings have cured, all equipment would be anchored into final position, and wiring, controls, and protective devices would be installed. All new components would be delivered to the site using a flatbed truck and positioned using a small crane. Equipment testing would be performed following the completion of the control enclosures and the installation of the relay panels, controls, batteries, and AC system.

1.7.5.4 Access Driveway and Interior Road Construction

Access road construction would begin by excavating a maximal depth of 7 feet at the intersection with El Pomar Drive, tapering off to 2 feet deep for the remainder of the road. Next, the road would be graded and compacted in accordance with engineering standards and the geotechnical requirements. Following compaction, road base would be imported, distributed on-site, and compacted. Finally, conventional paving equipment would be used to distribute the asphalt road material along the main access route and driveways. It is assumed that paving of the access road would occur after major construction at the substation site is completed. The entrance location would be in compliance with the San Luis Obispo County requirements for line of sight.

1.7.5.5 230 kV Transmission Interconnection Construction

Installation of the 230 kV transmission interconnection to New Templeton Substation would require a number of activities including setting the new TSPs, foundations, TSP assembly, and partial erection for the new TSPs. Construction activities would include the following:

- Adjacent to the existing 230 kV transmission line, a temporary connection (commonly referred to as a "shoo-fly") would be installed to ensure that the existing 230 kV transmission line remains in service. Near the existing tap structures at each location, one to three (depending on the orientation of the conductor wires) wood poles would be placed in the ground without foundation and guy-wired for stability. The temporary structures would connect the conductors as necessary for the existing 230 kV transmission line to remain in service.
- Clear the first circuit on the existing double-circuit 230 kV transmission line, and move the phase conductors off the two existing LSTs onto the temporary poles. Re-energize the first circuit.
- Clear the second circuit on the existing double-circuit 230 kV transmission line, and complete the erection and interset of three new TSPs. Dead-end the phase conductors for the circuit and install temporary jumpers.
- Secure the OPGW at each new tower and install five LSTs for the New Templeton Substation interconnection.
- Re-energize the second circuit and clear the first circuit on the existing 230 kV transmission line. Transfer the existing phase conductors from the temporary poles to the new towers. Dead-end the phase conductors on the new towers and install permanent jumpers, reattach the phase conductors, and re-energize the first circuit.
- Remove the temporary poles and anchors used for the shoo-fly.

The 230 kV interconnection TSPs would be installed on concrete pier foundations. Large augers and drill rigs would complete the required excavations and, if necessary, a reinforcing steel rebar

cage would then be lowered into the excavation. An approximately 2-foot-tall form would be constructed. Concrete would then be poured to fill the excavation. Each completed foundation would be left to cure for 7 to 14 days. Typical foundation dimensions for the 230 kV interconnection are included in Table 2-5, 230 kV Interconnection Structure Foundation Summary.

Table 1-5. 230 kV Interconnection Structure Foundation Summary

Foundation Type	Quantity	Approximate Diameter (feet)	Approximate Depth (feet)	Approximate Excavation Volume* (cubic yards)	Approximate Concrete Volume* (cubic yards)
230 kV TSP	8	4.5–5.0	16.5–18.0	7.9–10.9	9.7–13.1

* Volumes are per structure.

New TSPs, along with crossarms, insulators, and hardware, would be delivered to structure sites in two or more sections using a flatbed truck and assembled on-site. The crossarms would be attached, the pole would be placed onto the cured concrete and anchor bolt foundation using cranes, and the pole would be secured using the appropriate hardware. If the pole is delivered in multiple segments due to access restrictions or other engineering considerations, the segments would be placed in order and secured using hardware. Insulators and additional hardware would be added to the tower using a bucket truck. In areas of difficult terrain, poles may be delivered and assembled on their foundations using a helicopter. If applicable, the existing conductor would then be attached to the new TSP hardware.

1.7.5.6 Telecommunications and Power Interconnection Construction

For the 230 kV substation, the back-up electric power source and telecommunication lines would be brought to the site either on overhead distribution poles or in underground conduits. If overhead, up to three wood poles (distribution poles, approximately 30 feet tall) may be constructed within the substation permanent disturbance area. The poles would be direct embedded up to approximately 6 feet. If undergrounded, the back-up power and communications could be brought into the 230 kV substation in up to three underground conduits. Open trenching and/or horizontal directional drilling (HDD) may be used to install the conduits for power and communications cables. Any directional drilling pits would occur within the permanent or temporary disturbance areas. Depending on the voltage level and distance from the PG&E distribution line, either a pole-mounted transformer (on a PG&E pole) along the existing distribution line that intersects the utility corridor or a pad-mounted transformer located adjacent to the control enclosure would be installed.

To supply telecommunications to the new 70 kV substation, the OPGW cable located on top of the existing 230 kV line would be brought from the existing LST supplying the existing Templeton Substation. The OPGW cable would then be rolled back to the first LST located both northeast and southwest from where the cable is to be cut. The cable would then extend down a tower leg at each of the towers and enter into a pull box. The pull boxes located near the bases of the existing towers and pull boxes installed near the fence line of the substation would be

connected by underground conduit. The OPGW cable would transition on the tower legs to an underground fiber optic duct cable and then travel through 4-inch PVC conduit until terminating inside the 70 kV substation control house. Approximately 3,000 feet of new 4-inch conduit would be installed to complete the telecommunications system extension.

For the ADSS fiber optic line connection between New Templeton Substation and Paso Robles Substation, the telecommunication lines would be brought from the control building at New Templeton Substation to a 70 kV power line pole on the north side of El Pomar either on overhead poles or in underground conduits, then follow the 70 kV power line to Paso Robles Substation. If overhead, approximately two wood poles (approximately 30 feet tall) may be constructed.

The installation process for the underground portion of the telecommunications system extension is described in the subsections that follow. The conduit would be installed using open trenching methods of construction, HDD techniques, or a combination of the two. The actual method of installation would be determined during final design.

Open Trench Method

Excavators and other earth-moving equipment would be used to establish trenches for telecommunication lines, which typically range between 36 and 60 inches in depth, and 24 and 36 inches wide. Depths may vary depending on soil stability and the presence of existing substructures and discussions with adjacent property owner/farmer.

Once a trench is excavated, large diameter gravel would be applied to the bottom of the trench to create a level bed for the conduit and act as a French drain. PVC conduit would then be placed in the trench and a granular substrate (typically sand) level would then be layered around the conduits for additional protection and stability. The excavated material would be used to backfill the remainder of the trench. During backfill operations, “warning tape” would be placed at least 12 inches above the conduit. Once the trench is backfilled, the area would be compacted using portable compaction devices.

Horizontal Directional Drilling Installation

HDD is a highly specialized boring technique that may be used to install conduits beneath the existing vineyards in the vicinity of the telecommunications system extension. 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 particular drill.

The first step would be to drill a fluid-filled pilot bore. The first and smallest of the cutting heads would begin the pilot hole at the surveyed entry point in the entry pit. The first section of the drill stem has an articulating joint near the drill-cutting head that the HDD operator can control. Successive drill stem sections would be added as the drill head bores along the specified route. The drill head would then be articulated slightly by the operator to follow a designed path under the crossing and climb upward toward the exit point. Once the pilot hole is completed, a succession of larger cutting heads and reamers would be pushed and pulled through the borehole until it is the appropriate size for the 4-inch conduit. Using this method, the conduit would be installed up to 10 feet under the existing grade.

An entry pit and an exit pit are required for each HDD to contain the drilling mud. In general, the work area required on both the entry and exit sites would be approximately 50 by 50 feet. A non-toxic, water-based lubricant containing water and bentonite clay, referred to as drilling mud, would be used to aid the drilling, coat the walls of the borehole, and maintain the opening. During the bore, drilling mud would be pumped under high pressure through the drill stem to rotate the cutting head and return the soil cuttings to a pit at the surface entry point. No additives considered hazardous according to federal and state laws would be used during the HDD process. The drilling mud would be received in an approximately 6- by 6-foot pit.

The drilling mud returned back through the bore-drilled hole would be pumped from the entry and exit pits to a processing/shaker unit where the soil cuttings are removed, allowing the drilling mud to be reused. It is anticipated that the majority of the drilling mud would be recycled by the drilling contractors and used on subsequent projects. Any excess clean drilling mud would be disposed of at an appropriate waste facility.

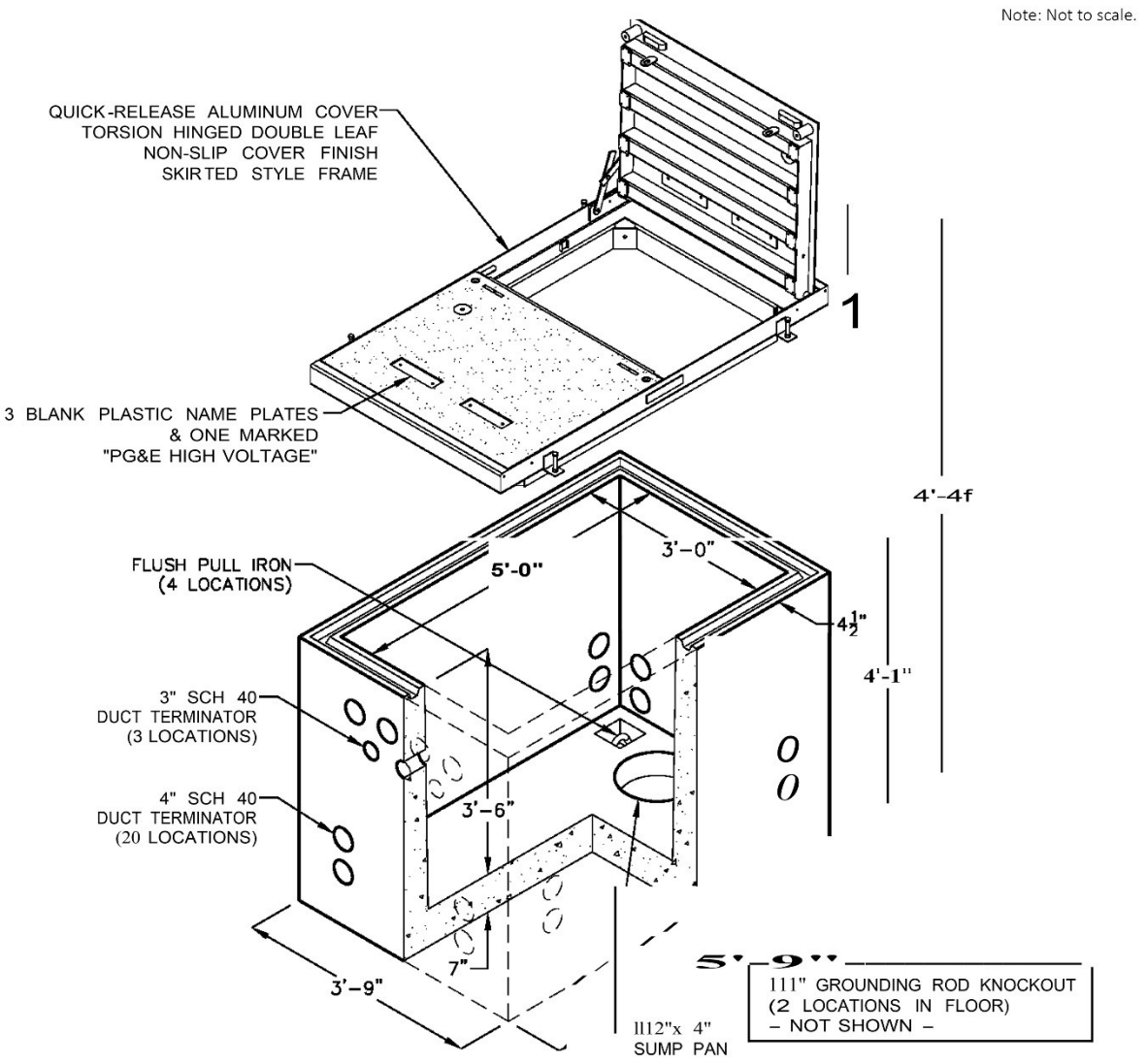
Once the borehole reaches the correct diameter, the conduit would be pulled through the borehole until it surfaces on the other side. The installed conduit would then be connected to adjacent splice boxes and/or other sections of conduit, and the entry and exit pits would be backfilled.

As part of the drilling design process, a geotechnical survey of subsurface conditions was conducted to determine the underlying geologic strata along the bore path. Infrequently, the geologic strata above the bore may be weaker than anticipated and/or unconsolidated. As the HDD passes under these locations, the high pressure of the drilling mud may result in a fracture of these strata, allowing drilling mud to rise to the surface. This situation is termed a "frac-out" and is usually resolved by reducing the mud system pressure or increasing the mud viscosity. If a frac-out occurs, the boring operation would be stopped immediately, and the following plan of action would be implemented:

- Isolate the area with straw bales, sand bags, or silt fencing to surround and contain the drilling mud.
- Remove the drilling mud using one of the two following methods based on the location and volume of mud leaching from the frac-out hole:
    (1) A mobile vacuum truck would be used to pump the drilling mud from the contained area. If the vacuum truck does not have a hose of the appropriate length, a series of one or more gasoline- or diesel-powered pumps may be connected to the vacuum truck to extend its reach. Each pump would be placed in a plastic tub or other form of containment.
    (2) The drilling mud would be removed with hand tools if a frac-out is small.

In order to facilitate the pulling and splicing of the cables, an underground pull/splice box would be installed at the base of an existing or newly installed structure. All pull/splice boxes used for the project would be pre-cast polymer concrete and traffic-rated boxes, measuring approximately 3 by 5 feet, as shown in in Figure 2-12, Typical Pull/Splice Box. These splice boxes would provide access during operations to the underground cables for maintenance, inspection, and repair.

Figure 1-16. Typical Pull/Splice Box



An excavator or backhoe would be used to excavate a 5-foot-deep cavity near the base of the pull/splice box, measuring approximately 4 by 6 feet. The pull/splice box would be delivered to the project site on a flatbed truck and lowered into place using a small truck-mounted crane. The pull/splice box would then be connected to the underground conduits before being covered with at least 2.5 feet of compacted fill. The area around the pull/splice box would be restored with native soil saved from the initial excavation.

After installation of the conduit, the project proponents would install the communication cable in the conduits. Each cable segment would be pulled into the conduit, spliced at each splice box, and terminated at the transition where the lines convert to overhead. To pull the cable through the conduit, 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 conduit using a fish line, and attached to the cable-pulling eyes. The cable-pulling eyes would then be attached to the cable and the cable is then pulled through the conduit. A lubricant would be applied to the cable as it enters the conduit to decrease friction during pulling.

1.7.6 Power Line Construction

Power line installation would begin with the clearing of the work areas at the location of each structure using a mower and/or backhoe. If necessary, minor grading may be conducted to develop a flat, safe area.

1.7.6.1 Crossing Structure Installation

Crossing structures would be installed to protect existing roadways and other facilities from sagging conductors during construction. PG&E would auger an approximately 2-foot-diameter, 8-foot-deep hole within each crossing structure work area to facilitate the crossing structure installation. The temporary wood poles would then be placed in the excavations by using a small crane, line truck, or loader, and secured by backfilling and compacting the excavated material into the remaining void. In areas where crossing protection may be short in duration or of low risk, equipment (e.g., line trucks or cranes) may be used in place of crossing structures to shield the crossing from potentially sagging conductors. Crossing structures may also be mounted on line trucks rather than in the ground.

Netting may be used if required for crossing over major roads. A crossing structure would be installed on both sides of the road and netting would be strung between the structures. The crossing structure would be installed according to encroachment permit requirements.

1.7.6.2 Power Line Structure Installation

The 70 kV TSPs would be installed on concrete pier foundations. Large augers and drill rigs would complete the required excavations and, if necessary, a reinforcing steel rebar cage would then be lowered into the excavation. An approximately 2-foot-tall form would be constructed, and concrete would then be poured to fill the excavation. Each completed foundation would be left to cure for 7 to 14 days. Typical power line structure foundation dimensions are included in Table 2-6, Power Line Route Structure Foundation Summary.

Table 1-6. Power Line Route Structure Foundation Summary

Foundation Type	Quantity	Approximate Diameter (feet)	Approximate Depth (feet)	Approximate Excavation Volume* (cubic yards)	Approximate Concrete Volume* (cubic yards)
70 kV Light Duty Steel Pole	40	3	12–20	3.1–5.2	0
70 kV Tubular Steel Pole	23	4.5–5.0	16.5–18.0	7.9–10.9	9.7–13.1

* Volumes are per structure.

Typical equipment used for power pole installation includes truck-mounted augers and drills to excavate the holes. When foundations are needed, concrete trucks supply and pour concrete into installed holes. Cranes are used to lift and place new poles/towers into the newly installed holes or foundations. Cranes and/or bucket trucks lift workers into elevated positions to work on newly installed poles or towers. Crew cab and pickup trucks are used to transport workers and tools to each installation site. Water trucks and portable water tanks are used to minimize fugitive dust during excavation and restoration activities.

New TSPs, along with crossarms, insulators, and hardware, would be delivered to structure sites in two or more sections using a flatbed truck and assembled on-site. The crossarms would be attached, the pole would be placed onto the cured concrete and anchor bolt foundation using cranes, and the pole would be secured using the appropriate hardware. If the pole is delivered in multiple segments due to access restrictions or other engineering considerations, the segments would be placed in order and secured using hardware. In areas of difficult terrain, poles may be delivered and assembled on their foundations using a helicopter. Once the pole is installed, additional hardware would be added to the crossarms using a bucket truck. If applicable, the existing conductor would then be attached to the new TSP hardware. Excess soils would be removed to staging area and then covered, tested, and disposed of as required.

Similar to TSPs, LDSPs, as well as crossarms, insulators, hardware, and any wood poles, would be delivered to structure sites in flatbed trucks. The LDSPs would be embedded directly into the ground and would not require a separate concrete foundation. Installation includes excavation of an up to 3-foot-diameter, 12- to 20-foot-deep hole. Following the excavation process, the poles, insulators, and hardware would be assembled. The poles would then be placed into the excavated hole using line trucks or cranes, the remaining void would be backfilled, and the backfill area would be compacted using portable compacting machinery. Once the pole is embedded and the backfill area is compacted, additional hardware may be added to the pole using a bucket truck. If applicable, the existing distribution conductor would then be attached to the new LDSP hardware.

1.7.6.3 Existing Structure Removal

To accommodate installation of the New Templeton Substation and the new 70 kV power line, crews would remove existing distribution[5] and power line poles and hardware using cranes, aerial man lifts, and/or helicopters. At New Templeton Substation, approximately three existing distribution poles and four existing power line poles will be removed. In the 70 kV power line alignment, approximately two existing power line poles will be removed and relocated and two existing power line poles would be reframed to accommodate the adjusted alignment of the existing 70 kV power line. Old wood poles would simply be lifted out of the ground using mechanical equipment. Removal of steel poles would occur by excavating an area around the pole to a depth of approximately 2 to 4 feet, or deeper if requested by private property owners. The pole would then be cut off and the remaining base would be buried in place.

All removed poles would be transported off-site to the staging area or to the PG&E Service Center for reuse evaluation. Bases of the poles would then be removed by excavating the area around the base. The remaining void would then be backfilled with native soil saved from other excavations in the surrounding area. The site would be returned, as near as practicable, to its original contours (or in accordance with prearranged landowner agreements, where applicable).

1.7.6.4 Electric Distribution Line Outages

During construction, sections of distribution lines that would cross the project or would be collocated on the new 70 kV power line may be temporarily taken out of service. As part of its normal operating procedures, PG&E's Distribution System Operations group would coordinate taking the distribution lines out of service (i.e., taking a clearance). The Distribution System Operations group would assess how to accomplish the clearances, identify where and when clearances may occur, notify customers being served by the distribution line that power outages could occur, manage the clearances, and retain balance in the system by routing power to minimize customer outages.

To accomplish the clearances and maintain balance in the system, the Distribution System Operations group must operate switches at locations along the distribution lines being taken out of service, or along other distribution lines that may be affected by taking a line out of service. Sometimes the switches are thrown at a central location such as a substation, and sometimes switches are operated remotely by System Operations. Other times, the System Operations team must physically drive to a field location and operate the switch manually. Because switches are often located above ground-level on distribution poles, bucket trucks are used to enable a worker to reach the switches. Operating a switch takes a matter of minutes and the worker would return to other work once the switching is completed. These distribution-switching activities take place throughout PG&E's service territory and are an integral part of PG&E's ongoing operational activities.

[5] Distribution pole removal is preliminary and subject to change based on CPUC requirements, final engineering, and other factors.

1.7.6.5 Conductor Installation

The new pole line conductor installation process would begin by temporarily attaching sheaves and rollers to the lower end of the insulators to allow the conductor to be pulled along the line. A rope would then be pulled through the rollers from structure to structure. This may be accomplished using a helicopter in instances where terrain is difficult, or the use of a bucket truck or aerial man lift is not feasible. Once the rope is in place, it would be attached to a steel cable and pulled back through the sheaves. The conductor would then be attached to the steel cable and pulled back through the sheaves and into place using conventional tractor-trailer pulling equipment located within one of the substations or within designated pull sites located along the alignments. The pulling through each structure would be done under a controlled tension to keep the conductor elevated and away from obstacles.

After the new conductor has been pulled into place, the sag between the structures would be adjusted to a pre-calculated tension. The conductor would then be attached to the end of each insulator, the sheaves would be removed, and vibration dampers and other hardware accessories would be installed. The existing 12 kV distribution line would be transferred from the existing poles to new poles, where applicable. Old line would be removed from the sites on a line truck with trailer.

1.7.7 Future Distribution Facilities

Installation of a future 70/21 kV distribution transformer and related equipment would take place within the existing 70 kV substation. When such future distribution facilities are added, grading, site preparation, access driveway, and interior road construction would have been completed as part of the construction of the 70 kV substation.

Construction of any distribution substation equipment would be similar to that described for the 70 kV substation equipment. Foundation construction and trenching methods likely would be similar to those described in Section 2.8.5, Substation Construction. Equipment foundations would likely include drilled pier and pad type foundations. Trenching would likely be done to install additional conduits to route 21 kV cables and control cables between equipment and the existing control building. Once the 70/21 kV transformer is in place, a concrete curb would likely be poured to create a containment basin, then mineral oil would be delivered to complete the final assembly of the unit. The 70/21 kV transformer would be constructed with secondary containment design for oil containment in the event of a spill, and a Hazardous Material Business Plan would be filed with the State of California Environmental Reporting System and an SPCC Plan would be developed. All equipment would be tested after installation and wiring, and before placing in service. Equipment would be placed in service once individual circuits are ready to be energized and have been tested outside the substation.

1.7.8 Construction Water Use and Domestic Supply Services

The project substation site is not located within a water district or sewer service area. Water required for construction may come from several sources, including a municipal water source, delivered by water trucks, or Lake Nacimiento located northwest of Paso Robles. Another potential water source for construction would be recycled water from the City's newly upgraded wastewater treatment plant. In 2013, the City adopted a master plan to produce tertiary-quality

recycled water and distribute it to east Paso Robles, where it may be safely used for irrigation of City parks, golf courses, and vineyards. A geotechnical report and grading plan are needed to determine the amount of water required for construction.

1.7.9 Construction Workforce and Equipment

Different phases of the construction process would require varying numbers of construction personnel. On a typical workday, about 12–15 construction crewmembers would be working at New Templeton Substation. Similarly, about 25 construction crewmembers would be working on the installation and/or removal of power line structures. During pulling activities, a larger work team would be required to complete the various work stages. Typically, this activity would require about 30 workers, for short periods of time. During construction of the power line, up to four crews, consisting of approximately six workers would be working at any one time. The estimated equipment, duration of work, and personnel requirements by construction activity are presented in Table 2-7, Preliminary Construction Workforce and Equipment Use.

The equipment that would be used during project construction is outlined in Table 2-8, Construction Equipment Summary. This is a preliminary equipment list, and other equipment may be identified when the project design is finalized or during construction if unexpected conditions require additional and/or different equipment.

1.7.10 Construction Schedule

The project proponents estimate that construction of all project components would take about 7 months to complete. The preliminary construction schedule has been included as Table 2-9, Preliminary Construction Activity and Schedule.

Construction would typically occur 6 days per week (Monday through Saturday) throughout the duration of construction. Daily work hours would generally be 10 hours per day with construction typically occurring between 7:00 a.m. and 5:30 p.m. Occasionally, work may occur during the evening hours for activities such as monitoring the substation foundation curing process, and testing and commissioning the new substation components. However, such activities would not normally generate loud nose. Nighttime work may also be required when electrical clearances are available or for safe completion of a construction procedure. The San Luis Obispo County Noise Ordinance provisions for construction are 7:00 a.m. to 9:00 p.m., Monday through Friday, and 8:00 a.m. to 5:00 p.m. on Saturday and Sunday. The City Noise Ordinance states that construction is permitted between the hours of 7:00 a.m. and 7:00 p.m. daily, with no specific reference to weekend limits. Although not directly applicable, these local limits would be observed by project proponents whenever feasible.

Table 1-7. Preliminary Construction Workforce and Equipment Use

Project Phase / Task	Workers, Equipment	Quantity per Day	Equipment	Quantity per Day
New Templeton Substation				
230 kV Substation				
Access Roads	**Workers**	**10**	Skip Loader	2
	1-Ton Crew Cab Flat Bed, 4x4	1	Water Truck	1
	Dump Truck	2		
Site Work Area Preparation Mobilization	**Workers**	**10**	Roller	2
	Bulldozer	1	Grader	1
	Articulating Dump Truck	4	Tandem Axle Dump Truck	2
	Scraper	1	Water Truck	2
	Rubber Tire Loader	1	Pickup Truck	1
Fence and Gate Installation	**Workers**	**5**	3-Ton Flat Bed Truck	1
	½-Ton Pickup Truck, 4x4	1	Bobcat	1
	1-Ton Crew Cab Flat Bed, 4x4	1	Water Truck	2
Foundation Construction	**Workers**	**2–12**	Water Truck	1
	Hole Digger	1	Pickup Truck	1
	Backhoe/Dozer/Excavator	1	Crane or Boom Truck	1
Ground Grid / Conduit Installation	**Workers**	**5**	Water Truck	1
	Trencher	1		

Table 1-7. Preliminary Construction Workforce and Equipment Use

Project Phase / Task	Workers, Equipment	Quantity per Day	Equipment	Quantity per Day
Steel / Bus Erection	**Workers**	**5**	Aerial Man Lift	1
	Boom Truck	1	Water Truck	1
Install Yard Rock	**Workers**	**8**	Dump Truck	1
	Bobcat	1	Water Truck	1
Transformer and Equipment Delivery and Installation	**Workers**	**5–8**	Crane or Boom Truck	1
	2-Ton Truck	1	Tractor/Trailer	1
	Pickup Truck	1	Portable Gas/Diesel Generator(s)	1
	Bucket Truck	2		
Control Enclosure Delivery and Install	**Workers**	**6**	Crane	1
Remaining Equipment Delivery and Install	**Workers**	**2–5**	Boom Truck	1
Cable Installation and Termination	**Workers**	**5**	Aerial Man Lift	1
Testing and Commissioning	**Workers**	**2–5**	Pickup Truck with Trailer	2
Cleanup and Restoration	**Workers**	**3**	Front-End Loader	1
	Blader	1	Water Truck	1
70 kV Substation				
Site Work Area Preparation Mobilization	**Workers**	**6**	Grader	1
	Backhoe/Dozer/Excavator	1	1-Ton Pickup Truck, 4x4	2

Table 1-7. Preliminary Construction Workforce and Equipment Use

Project Phase / Task	Workers, Equipment	Quantity per Day	Equipment	Quantity per Day
Foundation Construction	**Workers**	**6**	Trencher	1
	Hole Digger	1	1-Ton Pickup Truck, 4x4	1.75
	Backhoe/Dozer/Excavator	1		
Ground Grid / Conduit Installation	**Workers**	**4**	1-Ton Pickup Truck, 4x4	1
	Backhoe/Dozer/Excavator	1	Trencher	1
Steel / Bus Erection	**Workers**	**8**	Aerial Man Lift	2
	Boom Truck	2	1-Ton Pickup Truck, 4x4	2
Equipment Delivery and Installation	**Workers**	**6**	Aerial Man Lift	2
	Boom Truck	1	1-Ton Pickup Truck, 4x4	2
Control Enclosure Delivery and Install	**Workers**	**5**	1-Ton Pickup Truck, 4x4	2
Cable Installation and Termination	**Workers**	**5**	1-Ton Pickup Truck, 4x4	2
Install Yard Rock	**Workers**	**6**	Dump Truck	1
	Bobcat	1	Backhoe/Dozer/Excavator	1
Cleanup and Restoration	**Workers**	**4**	1-Ton Pickup Truck, 4x4	1
Testing and Commissioning	**Workers**	**4**	1-Ton Pickup Truck, 4x4	1
230 kV Transmission Interconnection				
Site Work Area Preparation Mobilization	**Workers**	**8**	Backhoe/Dozer/Excavator	1
	½-Ton Pickup Truck, 4x4	1	Grader	1

Table 1-7. Preliminary Construction Workforce and Equipment Use

Project Phase / Task	Workers, Equipment	Quantity per Day	Equipment	Quantity per Day
	1-ton Crew Cab Flat Bed, 4x4	1	Water Truck	1
Foundation Tower Installation / Removal of One Tower	**Workers**	**10**	Pickup Truck	2
	Crane	3	Dump Truck	1
	Bucket Truck	2	2-Ton Truck	2
	Concrete Truck	2	Forklift	3
	Drill	1	Line Truck	2
	Backhoe	1	Water Truck	1
Conductor	**Workers**	**15**	Line Truck	2
	Bucket Truck	2	Pickup Truck/Crew Truck	4
	Crane	3		
Cleanup and Restoration	**Workers**	**5**	Pickup Truck	1
	Grader	1	Water Truck	1
	Backhoe	1		
Power Line Route				
New 70 kV Power Line				
Site Work Area Preparation Mobilization	**Workers**	**6**	Grader	2
	1-Ton Crew Cab Flat Bed, 4x4	1	Backhoe	1
	Pickup Truck	1	Water Truck	2

Table 1-7. Preliminary Construction Workforce and Equipment Use

Project Phase / Task	Workers, Equipment	Quantity per Day	Equipment	Quantity per Day
Pole Tower Installation	**Workers**	**21**	2-Ton Truck	3
	Concrete Truck	3	Line Truck	3
	Backhoe	2	Utility Truck	1
	Tractor Trailer	1	Water Truck	2
	Pickup Truck	3	Crane	1
	Bucket Truck	3		
Conductor Installation	**Workers**	**18**	Wire Truck/Trailer	1
	Line Truck	3	Crane w/basket	3
	Pickup Truck	3	Bucket Truck	2
	2-Ton Truck	3	Light Duty Helicopter	1
	Wire Puller	1	Forklift	1
	Tensioner	1	Water Truck	1
Cleanup and Restoration	**Workers**	**6**	Backhoe	1
	Pickup Truck	1	Water Truck	1
	Grader	1		
Future Distribution Facilities				
Mobilization	**Workers**	**6**	2-Ton Truck	1
	1-Ton Crew Cab Flat Bed, 4x4	2	1-Ton Crew Cab Flat Bed, 4x4	1

Table 1-7. Preliminary Construction Workforce and Equipment Use

Project Phase / Task	Workers, Equipment	Quantity per Day	Equipment	Quantity per Day
	Water Truck	1	Backhoe	1
Foundation Construction	**Workers**	**2–12**	Backhoe	1
	1-Ton Crew Cab Flat Bed, 4x4	1–3	2-Ton Truck	1–3
Ground Grid/Conduit Installation	**Workers**	**5–10**	Crane	1
	1-Ton Crew Cab Flat Bed, 4x4	1–2	2-Ton Truck	1
Steel/Bus Erection	**Workers**	**5**	Pickup Truck	1
	Concrete Truck	2	2-Ton Truck	1
Distribution Bank and Breaker Installation	**Workers**	**5**	Crane	1
	1-Ton Crew Cab Flat Bed, 4x4	2		
	Semi-trailer Truck	1	Bucket Truck	2
Distribution Feeder, Conduit, Boxes, Underground Cable, Riser Poles, Line Work	**Workers**	**8**	Line Truck	2
	1-Ton Crew Cab Flat Bed, 4x4	1	Backhoe	1
	2-Ton Truck	1	Crew Truck	2
Cable Installation and Termination and Indoor Control Building Work	**Workers**	**3–5**	Backhoe	1
	1-Ton Crew Cab Flat Bed, 4x4	2	1-Ton P/U Truck, 4x4	1
	2-Ton Truck	1		

Table 1-7. Preliminary Construction Workforce and Equipment Use

Project Phase / Task	Workers, Equipment	Quantity per Day	Equipment	Quantity per Day
Testing	**Workers**	**3**	1-Ton P/U Truck, 4x4	3–4
Cleanup and Restoration	**Workers**	**3**	1-Ton Crew Cab Flat Bed, 4x4	1
	1-Ton Pickup Truck, 4x4	4	Water Truck	1
	Backhoe (or similar)	1		

Table 1-8. Construction Equipment Summary

Equipment	Use
Aerial Man Lift	Lifts crew members to make line connections
Auger (truck mounted highway digger 15- to 18-foot depth capability)	Drill holes for pole installation
Bore/drill rig	Installation of holes for new conduits
Cement and mortar mixer	Backfill of conduits
Concrete/industrial saw	Asphalt/concrete cutting associated with substation modification/expansion
Crane	Lifting of heavy equipment
Crew-cab truck or pickup truck	Transport personnel
Drill rig	Install electrical wells
Dump Truck (articulating or rigid, single or tandem axle truck)	Earth movement associated with substation modification/expansion; miscellaneous trash removal
Portable Gas/Diesel Generator	Power generation for operation of tools
Line truck (with auger, puller, worker-lift bucket, crane/boom, etc.)	Install and remove holes, poles, conductor
Mechanics service trucks	Service/repair vehicles
Grader	Create a finish grade at substation or orchard access road
Paving equipment (roller)	Asphalt installation and surfacing
Plate compactor	Grading
Puller/Tensioner (line truck or trailer-mounted)	Install conductor
Pump	Dewatering if groundwater is encountered, and watering for dirt suppression, if necessary
Reel trailer with reel stands (trailer or truck-mounted type)	Haul conductor
Forklift	Activities associated with substation modification/expansion, including transport of poles
Semi-trailer truck (tractor trailer and wire truck)	Haul grader, wire reel, or tubular steel pole
Sweeper/Scrubber	Road cleaning, if necessary
Tractor/loader/backhoe	Grading and foundation removal; backfilling of holes
Trencher	Installation of conduits and grounds at substations

Table 1-8. Construction Equipment Summary

Equipment	Use
Water truck	Dust suppression
Welder	Welds associated with substation modification/expansion

Table 1-9. Preliminary Construction Activity and Schedule

Project Phase	Task	Estimated Work Dates*
New Templeton Substation		
Substation Site	Site Work Area Preparation Mobilization	Month 1–2
	Access Roads	Month 1
	Fence and Gate Installation	Month 2
230 kV Substation	Foundation Construction	Month 2–3
	Ground Grid / Conduit Installation	Month 3–4
	Steel / Bus Erection	Month 4
	Install Yard Rock	Month 4–5
	Transformer and Equipment Delivery and Installation	Month 4–5
	Control Enclosure Delivery and Install	Month 5
	Equipment Delivery and Install	Month 5–6
	Cable Installation and Termination	Month 5–6
	Testing and Commissioning	Month 6–7
	Cable Installation and Termination	Month 5–6
	Testing and Commissioning	Month 6–7
	Cleanup and Restoration	Month 7
70 kV Substation	Foundation Construction	Month 2–3
	Ground Grid / Conduit Installation	Month 2–3
	Steel / Bus Erection	Month 3–4
	Control Enclosure Delivery and Install	Month 4
	Equipment Delivery and Installation	Month 4

Table 1-9. Preliminary Construction Activity and Schedule

Project Phase	Task	Estimated Work Dates*
	Cable Installation and Termination	Month 4–5
	Install Yard Rock	Month 5
	Cleanup and Restoration	Month 5
	Testing and Commissioning	Month 6
230 kV Transmission Interconnection	Foundation Tower Installation / Removal of One Tower	Month 2–4
	Conductor	Month 4-5
	Cleanup and Restoration	Month 6
Power Line Route		
New 70 kV Power Line	Site Work Area Preparation Mobilization	Month 1
	Pole Installation / Transfer / Distribution	Month 2–4
	Conductor Installation	Month 4–5
	Cleanup and Restoration	Month 5
Future Distribution Facilities		***Total of 19 weeks****
	Mobilization	2 weeks
	Foundation Construction	6 weeks
	Ground Grid/Conduit Installation	4 weeks
	Steel/Bus Erection	4 weeks
	Distribution Bank and Breaker Installation	3 weeks
	Distribution Feeder, Conduit, Boxes, Underground Cable, Riser Poles, Line Work	6 weeks
	Cable Installation and Termination, Indoor Control Building Work	4 weeks
	Testing	4 weeks
	Cleanup and Restoration	2 weeks

Notes: This table is preliminary and subject to change based on CPUC requirements, final engineering, and other factors.

* Months are provided for duration estimates.

** Although the start date is not known at present, construction of the future 70/21 kV transformer and other 21 kV distribution facilities is estimated to last a total of 19 weeks (approximately 4 months) because many of the phases overlap.

1.8 OPERATION AND MAINTENANCE

This section describes the operation and maintenance activities that would be conducted for each project component once the project has been constructed and is in service. No additional staff would be required on-site after construction of New Templeton Substation is completed.

The project proponents would operate all new and existing components of the project according to their respective standard operating protocols and procedures. No changes to standard operating procedures are proposed as part of the project. The project proponents anticipate using similar substation monitoring, control, and data acquisition architecture (SCADA) as used for their other power delivery assets, including the use of standard monitoring, control, protection equipment, circuit breakers, and other line relay protection equipment. The substation would be dual scanned from PG&E and HWT data centers, and redundant Inter-Control Center Communications Protocol servers would exchange SCADA data with CAISO with real-time situational awareness. The SCADA support personnel would perform daily checks of the applications and hardware to ensure they are in proper working order. The SCADA system would also be maintained to ensure compliance with NERC Critical Infrastructure Protection Standard requirements.

1.8.1 New Templeton Substation

1.8.1.1 230 kV Substation

The proposed 230 kV substation would be remotely operated from a control center operated by a HWT affiliate, subject to approval by CPUC and other applicable regulatory authorities.

A maintenance plan for the substation would be created in accordance with the equipment vendors' directives, industry practice, HWT's internal guidelines, and regulatory requirements. The plan would comply with the CAISO Transmission Control Agreement and Maintenance Practices Procedure and approved by CAISO before the start of commercial operation.

In general, monthly inspections would be performed on the substation to inspect each required piece of equipment and ensure that no obvious abnormalities exist to the extent possible without taking the substation or transmission line(s) out of service. More invasive checks, calibrations, and maintenance on the substation's components would be performed periodically. Owing to the diversity of substation equipment and the individual system components, a small, specialized team would execute the varying degrees of monthly and annual maintenance requirements.

1.8.1.2 70 kV Substation

Remote operation of the 70 kV substation would occur from a Grid Control Center that operates 24 hours a day, 7 days a week, each day of the year to oversee PG&E's 70 kV electrical grid. The Grid Control Center is equipped with full utility redundancy, back-up power, and telecommunications that would serve as PG&E's Emergency Operations Center in times of natural disaster.

Existing operation and maintenance crews would monitor the new substation equipment as part of their current substation operation and maintenance activities. Maintenance plans for all

PG&E facilities are entered and tracked using PG&E's Systems, Applications, and Products system. PG&E's existing local maintenance and operations group would perform monthly inspections, patrol, and maintenance duties as needed for the 70 kV substation.

1.8.2 Power Line

The proposed power line components would operate unattended. An approximately 25-foot radius (approximately 1,963.5 square feet) may be maintained around new power poles dependent on location and equipment installed as required by applicable law, including CPUC G.O. 95. Project proponents may therefore keep these areas clear of natural vegetation. Vegetation growing too close to conductors within the easement would be trimmed or removed for safety. Herbicides may be used for some vegetation maintenance activities.

Inspections of the power line segments would be performed annually by PG&E routine patrols, either from the ground or by helicopter. A detailed inspection of the power lines is typically performed by staff every 2 years (wood structures), with an air patrol inspection performed in between, as outlined in PG&E's 2016 Electric Transmission Preventative Maintenance Manual. For lines constructed on steel structures, detailed inspections would occur every 5 years.

The inspection process involves routine patrols from existing local staff either on the ground or by helicopter tasked with patrolling the power lines. Normal inspection and patrols would typically be completed in a 4×4 pickup and/or an off-road utility vehicle. While not expected, if walking is required, the 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.

1.8.3 Future Distribution Facilities

PG&E would continue to operate the 70 kV substation with future distribution remotely from its Grid Control Center. The distribution feeders would continue to be operated and controlled from the Distribution Operations Office located in Concord, California. Existing operation and maintenance crews would monitor the future distribution facilities as part of their current operation and maintenance activities. The distribution feeders would operate unattended.

1.9 APPLICANT PROPOSED MEASURES

The following APMs (Table 2-10, Applicant Proposed Measures) would be implemented by the project proponents in order to avoid and minimize potential impacts. The APMs are discussed in context with environmental resources in their respective Chapter 3 sections. The significance of each project impact is first considered prior to application of APMs. The implementation of APMs is then considered part of the project when evaluating significance.

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
GENERAL			
GEN-1	**Prepare and Implement a Worker Environmental Awareness Program.** The project proponents will prepare and implement a project-specific Worker Environmental Awareness Program (WEAP) for construction personnel. All on-site construction personnel will attend the training before they begin work on the project. WEAP training materials will include avoidance and minimization measures being implemented to protect biological resources, surface and groundwater resources, cultural resources, and paleontological resources; minimize air quality impacts; and manage hazardous materials. WEAP training will also discuss terms and conditions of any permits or agreements, information on federal and state environmental laws, and consequences and penalties for violation or noncompliance with these laws and regulations and project permits. Workers will be informed about the presence, identification, life history, and habitat requirements of the special-status species that have a potential to occur in the project area. More specifically, training will include: • recognizing/avoiding exclusion areas and sensitive habitat and specific avoidance or minimization measures for sensitive species and habitats; • how to identify cultural resources; avoidance requirements and procedures to be followed if unanticipated cultural resources are discovered during construction; disciplinary actions that may occur when historic preservation laws and project proponent policies are violated; • how to identify paleontological resources, including types of fossils that could occur in the project area and types of lithologies in which the fossils could be preserved; avoidance requirements and procedures to be followed if a fossil is discovered during construction; penalties for disturbing paleontological resources; • hazardous substance spill prevention and containment measures; and • review of mitigation and avoidance measures. A brochure prepared by the project proponents conveying this information will be prepared for distribution to all construction staff and other individuals who enter the construction footprint. All WEAP trainees will receive a project sticker for their hard hat to show they have been trained, sign a training sign-in sheet, verifying participation and that they understand the training and will comply with the information presented. Focused trainings may be directed at an individual's job-specific task, provided that the worker conducts activities within a limited scope (pilots, delivery drivers, site visitors, etc.).	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
AESTHETICS			
APM AES-1	**Substation Hardscaping.** Decorative rock and/or other hardscape landscaping will be installed between New Templeton Substation and El Pomar Drive.	✓	N/A
APM AES-2	**Light and Glare Reduction.** Construction lighting and permanent substation exterior lighting will be selectively placed and shielded to minimize nighttime glare.	✓	✓
AGRICULTURE AND FOREST RESOURCES			
APM AG-1	**Coordinate with Landowners, Farmers, and Ranchers Regarding Construction Activities.** The project proponents will work with farmers, ranchers, and landowners to schedule project-related construction activities in a manner that avoids conflicts with harvest and planting periods, to the extent feasible, and in a manner that minimizes disruptions to agricultural operations. Access across active fields shall be negotiated with the landowner in advance of any construction activities. Coordination will include advance notice of construction activities and reporting of complaints, as follows: • Prior to construction, the project proponents will give at least 30 days' advance notice of the start of construction-related activities. Notification shall be provided by mailing notices to all properties within 300 feet of the substation or power line route. The notice will describe where and when construction activity is planned and shall provide contact information for a point of contact for complaints related to construction activities. • Prior to commencing ground disturbing activities, the project proponents will submit a copy of the template used for the notification letter and a list of the landowners notified to CPUC.	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
AIR QUALITY			
APM AIR-1	**Minimize ROG, NO_X, and PM Combustion.** • Maintain all construction equipment in proper tune according to manufacturer's specifications; • Fuel all off-road and portable diesel powered equipment with CARB-certified motor vehicle diesel fuel (non-taxed version suitable for use off-road); • Use on-road heavy-duty trucks that meet CARB's 2010 or cleaner certification standard for on-road heavy-duty diesel engines, and comply with the state On-Road Regulation; • Construction or trucking companies with fleets that that do not have engines in their fleet that meet the engine standards identified in the above two measures (e.g., captive or NOx exempt area fleets) may be eligible by proving alternative compliance; • All on and off-road diesel equipment shall not idle for more than 5 minutes. Signs shall be posted in the designated staging areas and substation site to remind drivers and operators of the 5-minute idling limit; • Electrify equipment when feasible; • Substitute gasoline-powered in place of diesel-powered equipment, where feasible; and, • Use alternatively fueled construction equipment on-site where feasible, such as compressed natural gas (CNG), liquefied natural gas (LNG), propane, or biodiesel.	✓	✓
APM AIR-2	**Air Quality Best Available Control Technology for Construction Equipment.** Best Available Control Technology (BACT) measures for the project include: • Reduce emissions by expanding use of Tier 3 off-road and 2010 on-road compliant engines; • Installing California Verified Diesel Emission Control Strategies.	✓	✓
APM AIR-3	**Minimize Fugitive Dust.** • Reduce the amount of the disturbed area where possible; • Use of water trucks or sprinkler systems in sufficient quantities to prevent airborne dust from leaving the site. • All dirt stock pile areas should be sprayed daily as needed;	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	• All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by SLOAPCD; • Vehicle speed for all construction vehicles shall not exceed 15 mph on any unpaved surface; • All trucks hauling dirt, sand, soil, or other loose materials are to be covered or should maintain at least two feet of freeboard (minimum vertical distance between top of load and top of trailer) in accordance with California Vehicle Code Section 23114; and, • Sweep streets at the end of each day if visible soil material extending over 50 feet is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where possible.		
BIOLOGICAL RESOURCES			
APM BIO-1	**Conduct Pre-Construction Survey(s) for Special-Status Species and Sensitive Resource Areas.** Biologists will conduct pre-construction survey(s) for special-status species and sensitive resource areas immediately prior to construction activities within suitable aquatic and upland habitat for special-status species. If a special-status species is encountered on the project site, the project proponents will be contacted immediately to determine the appropriate course of action. For federally or state listed species, the project proponents will contact the appropriate resource agency (USFWS and/or CDFW), as required.	✓	✓
APM BIO-2	**Avoid Impacts on Nesting Birds.** If work is scheduled during the nesting season (February 1 through August 31), nest detection surveys will correspond with a standard buffer for individual species in accordance with the species-specific buffers set forth in the project proponent's *Nesting Birds: Specific Buffers for PG&E Activities*, and will occur within 15 days prior to the start of work activities at designated construction areas, staging areas, and landing zones to determine nesting status by a qualified biologist. Nest surveys will be accomplished by ground surveys and/or by helicopter and will support phased construction, with surveys scheduled to be repeated if construction lapses in a work area for 15 days between March and July. Access for ground surveys will be subject to property access permission. Helicopter flight restrictions for nest detection surveys may be in effect for densely populated residential areas, and will include observance of appropriate established buffers and avoidance of hovering in the vicinity of active nest sites.	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	If active nests containing eggs or young are found, the biologist will establish a species-specific nest buffer, as defined in the project proponent's *Nesting Birds: Specific Buffers for PG&E Activities*. Where feasible, standard buffers will apply, although the biologist may increase or decrease the standard buffers in accordance with the factors set forth in *Nesting Birds: Specific Buffers for PG&E Activities*. Nesting pair acclimation to disturbance in areas with regularly occurring human activities will be considered when establishing nest buffers. The established buffers will remain in effect until the young have fledged or the nest is no longer active as confirmed by the biologist. Active nests will be periodically monitored until the biologist has determined that the young have fledged or once construction ends. Per the discretion of the biologist, vegetation removal by hand may be allowed within nest buffers or in areas of potential nesting activity. Inactive nests may be removed in accordance with PG&E's approved avian permits. The biologist will have authority to order cessation of nearby project activities if nesting pairs exhibit signs of disturbance. All references in this APM to qualified wildlife biologists refer to qualified biologists with a bachelor's degree or above in a biological science field and demonstrated field expertise in ornithology, in particular, nesting behavior.		
APM BIO-3	**Biological Monitoring.** Biologists will monitor initial ground-disturbing activities in and adjacent to sensitive habitat areas to ensure compliance with Best Management Practices and APMs, unless the area has been protected by barrier fencing to protect sensitive biological resources and has been cleared by the biologists. The monitor will have authority to stop or redirect work if construction activities are likely to affect sensitive biological resources. If a listed wildlife species is encountered during construction, project activities will cease in the area where the animal is found until the qualified biologist determines that the animal has moved out of harm's way, or with prior authorization from USFWS and/or CDFW if required, relocates the animal out of harm's way, and/or takes other appropriate steps to protect the animal. Work may resume once the qualified biologist has determined that construction activities will not harm any listed wildlife species. The project proponents will be responsible for any necessary reporting to USFWS and/or CDFW.	✓	✓
APM BIO-4	**Special-Status Species Protection.** All trenches/excavations in excess of 2 feet deep will have a sloped escape ramp or be covered at the end of the day. All trenches and excavations will be inspected for wildlife at the beginning of the workday and prior to backfilling. In addition, open-ended project-related pipes 4 inches or greater in	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	diameter will be capped if left overnight or inspected for wildlife prior to being moved. If a special-status species is discovered in a trench, excavation, or pipe, the animal will be left undisturbed, and the pipe will not be moved until the special-status species has left the area on its own accord. In the event that any special-status species is trapped and unable to leave on its own accord, a permitted biologist, defined as a qualified biologist that holds the appropriate federal and/or state permits, will recover and relocate the special-status species. In addition, all food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in closed trash containers or kept in closed vehicles. Trash containers will be removed from the project area on a regular basis.		
APM BIO-5	**Dead or Injured Special-Status Wildlife.** If any dead or injured special-status wildlife or birds protected by the Migratory Bird Treaty Act are discovered at the project during construction, work will stop in the immediate vicinity. The project proponents will notify the on-call biologist and the appropriate resource agency (USFWS and/or CDFW) before construction is allowed to resume.	✓	✓
CULTURAL AND PALEONTOLOGICAL RESOURCES			
APM CUL-1	**Retain a Qualified Cultural Principal Investigator.** A Cultural Resources Principal Investigator, defined as an archaeologist who meets the Secretary of the Interior's Standards for professional archaeology, will be retained to ensure that all APMs related to archaeological and historical resources are properly implemented. The Principal Investigator may either be on-staff with project proponents or an outside consultant, as appropriate for the project's needs, and will serve in a strictly supervisory capacity, overseeing crews charged with the application of the APMs in the field.	✓	✓
APM CUL-2	**Avoidance.** The project is designed to avoid impacts to potentially CRHR-eligible and CRHR-eligible resources identified within the study area. Potentially eligible (i.e., not evaluated) resources in the study area in include historic site EST-SR-001. To avoid indirect and direct impacts to EST-SR-001, a 50-foot buffer will be established around the boundary of the resource and designated as Environmentally Sensitive Areas. If work within the 50-foot buffer cannot be avoided, then monitoring will be required. Methods	N/A	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	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.		
APM CUL-3	**Inadvertent Discoveries.** In the event that unanticipated cultural materials are encountered during any phase of construction, all construction work within 50 feet of the discovery will cease and the Principal Investigator will be consulted to assess the find. Construction activities may continue in other areas. Avoidance of resources is the preferred option. However, if avoidance of a resource is not feasible, project proponents will assess the find for significance, as defined by PRC Section 21083.2, through implementation of Phase II investigations. If resources are found to be significant, a detailed archaeological treatment plan, including Phase III data recovery, will be developed and implemented by a qualified archaeologist.	✓	✓
APM CUL-4	**Discovery of Human Remains.** If human remains are discovered, all work within 50 feet of the discovery will cease and the Environmental Inspector or Construction Supervisor will notify the County Coroner immediately. State of California Health and Safety Code Section 7050.5 stipulates that no further disturbance will occur until the County Coroner has made a determination of origin and disposition pursuant to PRC Section 5097.98. The lead cultural resource managers on staff with the project proponents (depending on the location of the remains) and CPUC will also be notified of the find immediately. If the human remains are determined to be prehistoric, the County Coroner will notify the NAHC, which will determine and notify a Most Likely Descendent (MLD). The MLD will complete the inspection of the site within 48 hours of notification and may recommend scientific removal and nondestructive analysis of human remains and items associated with Native American burials.	✓	✓
APM CUL-5	**Tribal Construction Monitoring.** If it becomes necessary to work within 50 feet of known prehistoric archaeological sites, a tribal monitor will be selected by CPUC and retained to conduct full-time monitoring of initial ground-disturbing activities (i.e., initial excavation and grading) in areas with high potential to discover prehistoric archaeological resources.	N/A	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
APM CUL-6	**Archaeological Construction Monitoring.** If it becomes necessary to work within 50 feet of known prehistoric or historic sites, an archaeological monitor, approved by the Principal Investigator, will be retained to conduct monitoring of initial ground-disturbing activities (i.e., initial excavation and grading) in areas with high potential to discover prehistoric or historic archaeological resources.	N/A	✓
APM PALEO-1	**Retain a Qualified Paleontological Principal Investigator.** A Paleontological Resources Principal Investigator who meets the standards set forth by the Society of Vertebrate Paleontology will be retained to ensure that all APMs related to paleontological resources are properly implemented.	✓	✓
APM PALEO-2	**Inadvertent Discoveries.** If paleontological resources are discovered during construction activities, the following procedures will be followed: • Stop work immediately within 50 feet. • Contact the designated lead on staff with the project proponents (depending on the location of the resource) immediately. The designated lead will notify CPUC. • Protect the site from further impacts, including looting, erosion, or other human or natural damage. • The Principal Investigator will evaluate the discovery and make a recommendation to CPUC as to whether or not it is a unique paleontological resource. CPUC will have 24 hours to respond to this recommendation, and the lack of response within 48 hours will indicate concurrence with the recommendation. • If the resource is not a unique paleontological resource, then it will be documented appropriately, and no further measures will be required. • If the resource is a unique paleontological resource, the Principal Investigator, in consultation with the project proponent, will recommend resource-specific measures to protect and document the paleontological resource, such as photo documentation and avoidance or collection. CPUC will have 24 hours to respond to these measures, with no response within 48 hours indicating concurrence. Unique resources inadvertently discovered during augering will be documented as indicated above, but, due to safety concerns, any remaining resource	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	below ground will not be salvaged. If the resource can be avoided, then no CPUC concurrence will be necessary. • If collection is necessary, the fossil material will be properly prepared in accordance with the project proponents, Society of Vertebrate Paleontology guidelines, and CPUC requirements, and/or curation at a recognized museum repository. Appropriate documentation will be included with all curated materials. • Any material discovered on private land is the property of the landowner and permission must be granted by the landowner for the material to be removed and curated Once the resource is determined to be not unique, or appropriate treatment is completed as described above, work may resume in the vicinity.		
APM PALEO-3	**Paleontological Construction Monitoring.** Paleontological monitors, approved by the Paleontological Resources Principal Investigator, will be retained to conduct monitoring of the initial ground-disturbing activities as described below. Monitoring requirements vary with the sensitivity of the mapped sediments and the type of construction activity, as follows: 1. *New Templeton Substation:* High Surface Sensitivity – project areas mapped as older alluvium (Qoa), Paso Robles formation (Qtp), or Monterey formation (Tm): - In locations where the ground has been previously disturbed by agricultural or other development, monitoring is required only when excavations or grading exceed the depth of previous disturbance. For augering within the substation site, the proponents will follow the protocol identified below under Power Line. - In locations where no previous disturbance exists, full-time monitoring is required when excavations, grading, or trenching exceeds 3 feet in depth. During monitoring, a qualified paleontological monitor, as determined by the Principal Investigator, will observe construction activity as well as check any spoils piles to watch for the appearance of fossil resources. Low Surface Sensitivity – project areas mapped as Holocene alluvium (Qa) – no fossils at the surface: - No monitoring is required for surface work.	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	- Should ground disturbance exceed the depth of the Holocene sediments (estimated to be 5 feet), monitoring is required as described above for high sensitivity. 2. *Power Line:* High Surface Sensitivity – project areas mapped as older alluvium (Qoa), Paso Robles formation (Qtp), or Monterey formation (Tm): - Full-time monitoring will not be required along the power line route. - Augering that uses a drill bit 3 feet, or less, in diameter will not be monitored. Small-diameter drill bits generally result in pulverized rock by the time they reach the surface, so any fossils contained within will not be identifiable. Larger-diameter drill bits (i.e., greater than 3 feet) often bring up intact chunks of rocks that may contain identifiable and scientifically important fossils (particularly microfossils). All large angled tubular steel pole locations will be monitored. - During work, a portion of the excavated material will be examined visually and through screen-sifting, if necessary. If screening is necessary, then a sample of spoils may be collected and processed either on-site or off-site as work on the pole placement proceeds. Should unique fossil material be discovered, it may be recorded and collected if the resource is determined by the Principal Investigator to be worth salvaging. Otherwise it will be recorded and included in the final monitoring report. Should it be determined that the type of auger or drill being used renders monitoring not useful (i.e., materials come out of the hole in a pulverized powder or a silty mud), monitoring will be discontinued. - Because it is extremely unsafe and impractical to excavate fossils from within an auger bore or drill hole, and to do so would unnecessarily disturb fossils further, no effort will be made to collect buried fossils indicated in spoils materials. However, the location and nature of the materials identified will be recorded, and this will be documented in the final monitoring report and reported to repositories as appropriate. These measures are based on the currently available data. As construction proceeds and additional data becomes available, the Principal Investigator could revise these measures with CPUC concurrence. Should monitors identify fossil remains during the course of construction, APM PALEO-2 will be implemented. All monitoring activities will be documented on daily logs. Monitoring logs and reports will include the		

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	activities observed, geology encountered, description of any resources encountered, and measures taken to protect or recover discoveries. Photographs and other supplemental information will be included as necessary. A final monitoring report will be developed to document locations, methods, and results of monitoring.		
APM PALEO-4	**Fossil Recovery.** In the event that unique paleontological resources are encountered, protection and recovery of those resources may be required. The Principal Investigator will oversee the recovery effort in consultation with the project proponents (depending on the location of the resource), CPUC, and property owners as appropriate. The Principal Investigator may designate a paleontologist to implement the recovery, preparing specimens for identification and preservation, and completing all field documentation in accordance with the project proponents, Society of Vertebrate Paleontology guidelines, and CPUC requirements, and/or curation at a recognized museum repository. If fossil is not accepted by a museum for curation, then project proponents will have fulfilled their obligation for fossil recovery.	✓	✓
GEOLOGY AND SOILS			
APM GEO-1	**Soft or Loose Soils.** Soft or loose soils, such as sands and loamy sands, are likely to be encountered during construction. Where soft or loose soils are encountered during design studies or construction, appropriate measures will be implemented to avoid, accommodate, replace, or improve soft or loose soils. Such measures may include the following: • Locating construction facilities and operation away from areas of soft and loose soil. • Over-excavating soft or loose soils and replacing them with non-expansive engineered fill. • Increasing the density and strength of soft or loose soils through mechanical vibration and/or compaction. • Treating soft or loose soils in place with binding or cementing agents. • Construction activities in areas where soft or loose soils are encountered may be scheduled for the dry season, as necessary, to allow safe and reliable equipment access.	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
GREENHOUSE GAS EMISSIONS			
APM GHG-1	**Minimize Operational SF_6 Emissions.** During operation and maintenance of Estrella Substation, the project proponents will: • Incorporate Estrella Substation into each of the project proponents' system-wide SF6 emission reduction programs. CARB requires that company-wide SF6 emission rate not exceed 1% by 2020. • Upon construction completion, the project proponents will have implemented a programmatic plan to inventory, track, and recycle SF6 inputs, and inventory and monitor system-wide SF6 leakage rates to facilitate timely replacement of leaking breakers. X-ray technology is used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF6 handling and accidental releases. As active members of the U.S. Environmental Protection Agency's SF6 Emission Reduction Partnership for Electrical Power Systems, the project proponents have focused on reducing SF6 emissions from their transmission and distribution operations. • Require that the breakers at Estrella Substation have a manufacturer's guaranteed maximum leakage rate of 0.5% per year or less for SF6. • Maintain substation breakers in accordance with the project proponents' maintenance standards. • Comply with CARB's Early Action Items as these policies become effective.	✓	N/A
HAZARDS AND HAZARDOUS MATERIALS			
APM HAZ-1	**Hazardous Substance Control and Emergency Response.** The project proponents will implement hazardous substance control and emergency response procedures as needed. The procedures identify methods and techniques to minimize the exposure of the public and site workers to potentially hazardous materials during all phases of 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	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	stored on site. If it is necessary to store chemicals on site, they will be managed in accordance with all applicable regulations. Material safety data sheets will be maintained and kept available on site, as applicable. 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 will be tested, and, if contaminated above hazardous waste levels, will be contained and disposed of at a licensed waste facility. The presence of known or suspected contaminated soil will 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 will 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 will be resumed at this location after any necessary consultation and approval by the Hazardous Materials Unit.		
HYDROLOGY AND WATER QUALITY			
APM HYDRO-1	**Avoidance of Sensitive Aquatic Features.** The project will be designed to avoid sensitive aquatic features (i.e., jurisdictional wetlands, waters, and riparian areas) to the extent feasible. Specific avoidance strategies include: • Siting permanent structures in uplands outside of existing drainage features. • Siting staging areas, pole/tower work areas, pull sites, and other temporary staging/materials storage areas in uplands outside of existing drainage features/riparian areas, utilizing developed/urban, agricultural land, or ruderal land in preference to native terrestrial or riparian	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
	habitats. • Selecting access roads and overland travel routes in uplands while avoiding other sensitive features (e.g., steep slopes, rare plant localities, and sensitive wildlife habitats). • Should access or work areas be required through or within jurisdictional wetlands and waters, all regulated activities within jurisdictional wetlands and waters (e.g., waters of the United States and waters of the State) will require regulatory approval/permitting from the appropriate agency including USACE, CDFW, and/or RWQCB prior to any work within jurisdictional features. Prior to construction, sensitive aquatic features slated for avoidance will be identified in the field and clearly marked for avoidance using flagging tape, fencing, and/or high-visibility signage. Construction personnel will be trained on feature avoidance marking and associated restrictions.		
NOISE			
APM NOI-1	**Construction Schedule Limits.** The project proponents will limit grading, scraping, augering, and pole installation to 7:00 a.m. to 7:00 p.m. daily. Exceptions for work outside of these hours will follow the notification requirements outlined in APM AG-1.	✓	✓
APM NOI-2	**Noise Minimization.** The project will incorporate various measures to reduce construction related noise where feasible using the following methods: • Construction equipment will use noise reduction devices that are no less effective than those originally installed by the manufacturer. • Stationary equipment used during construction will be located as far as practical from sensitive noise receptors. • "Quiet" equipment (i.e., equipment that incorporates noise control elements into the design—compressors have "quiet" models) will be used during construction when reasonably available.	✓	✓

Table 1-10. Applicant Proposed Measures

APM No.	Description	Project Components	
		New Templeton Substation	Power Line
TRANSPORTATION AND TRAFFIC			
APM TR-1	**Air Transit Control.** The project proponents will implement the following protocols that pertain to helicopter use during construction: • Comply with all applicable Federal Aviation Administration regulations regarding air traffic; • Helicopter operators will coordinate all project helicopter operations with the Paso Robles Municipal Airport before and during project construction; • Coordinate with potentially affected residents or businesses to minimize the duration of necessary work and any resulting inconvenience; and, • Implement a Congested Area Plan if the helicopter work will take place in a congested or densely populated area. A congested area is anywhere that includes the presence of the non-participating public. A densely populated area is an area of a city, town, or settlement that contains a large number of occupied homes, factories, stores, schools, and other structures.	N/A	✓

1.10 ANTICIPATED PERMITS AND APPROVALS

CPUC is the lead state agency for the project under CEQA because a PTC is required in accordance with CPUC G.O. 131-D, Section III.B. G.O. 131-D contains the permitting requirements for the construction of transmission and power line facilities. In addition to the PTC, the project proponents would obtain all necessary permits for the project from federal, state, and local agencies. Table 2-11, Potential Permits and Approvals, provides the potential permits and approvals that may be required for project construction.

Table 1-11. Potential Permits and Approvals

Permit/Authorization	Agency	Jurisdiction/Purpose
Federal		
Aeronautical Study (7460-2 form)	Federal Aviation Administration	Determination of No Hazard to Air Navigation
State		
Permit to Construct (G.O. 131-D)	California Public Utilities Commission	Construction, modification, or alteration of power line facilities
Standard Encroachment Permit	California Department of Transportation	For use of California State highways for other than normal transportation purposes, including construction activities completed within the easement.
National Pollution Discharge Elimination System Storm Water Permit	State Water Resources Control Board	Construction activities disturbing 1 acre or more of soil must submit a Notice of Intent to comply with the terms of the general permit.
Local		
Encroachment Permit	City of Paso Robles	Construction in and adjacent to City property and right-of-way.
Air Pollution Control District Permit	San Luis Obispo Air Pollution Control District	For conducting activities which may result in air pollution.
Encroachment Permit	County of San Luis Obispo	Construction in and adjacent to County property and right-of-way.

1.11 ELECTRIC AND MAGNETIC FIELDS

Recognizing that there is public interest and concern regarding potential health effects from exposure to EMF from power lines and substations, Appendix B provides some general background information regarding EMF associated with electric utility facilities. However, EMF is not addressed here as an environmental impact under CEQA. CPUC does not consider EMF to be an environmental issue or, in the context of CEQA, an environmental impact. This is

because there is no agreement among scientists that EMF creates a potential health risk and because CEQA does not define or adopt standards for defining any potential risk from EMF.

Instead, CPUC requires project proponents to employ "no cost" and specified "low cost" measures to reduce public exposure to EMF in accordance with CPUC Decision 06-01-042, and would comply with their respective guidelines.

1.12 REFERENCES

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

California Independent System Operator (CAISO) 2014. *2013-2014 CAISO Transmission Planning Process, Estrella Substation Project Description and Functional Specifications for Competitive Solicitation.* June 26, 2014. Online: www.pge.com/includes/docs/pdfs/safety/pasorobles/PasoRobles_CAISO_ProjectDescription.pdf. Accessed November 5, 2016.

California Public Utilities Commission (CPUC). 2008. *Proponent's Environmental Assessment (PEA) Checklist for Transmission Line and Substation Projects*. Online: www.cpuc.ca.gov/WorkArea/DownloadAsset.aspx?id=5068. Accessed on August 4, 2016.