2 PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

PG&E proposes to construct and operate the Shepherd Substation, a 115/21-kV electrical substation with capacity for up to three 45-Megavolt Ampere (MVA) transformers. A 115-kV overhead power line interconnection would be constructed to link the substation to the existing power grid. The new 115-kV power line would be approximately 1.5 miles long. The existing distribution line located north of the substation would be extended to E. Copper Avenue as under-build along the new 115-kV power line. Two new 21-kV distribution lines and one 12-kV distribution line would be constructed south of the substation. The new distribution circuits to the south would primarily be underground. One of these circuits would transition to overhead, tying into an approximately one-mile portion of an existing overhead 12-kV distribution line that is being reconductored and converted to 21-kV voltage. The project location and project layout are shown in Figure 2.1-1. The project is located in an unincorporated area of Fresno County, California, north of the City of Clovis.

2.2 PURPOSE AND NEED

2.2.1 PROJECT PURPOSE

The purpose of the proposed project is to:

- Meet long-term capacity needs
- Increase future system flexibility
- Minimize ratepayer costs and environmental impacts

2.2.2 MAXIMIZE SYSTEM EFFICIENCY AND RELIABILITYPROJECT NEED

The proposed project is needed to accommodate existing load and future growth within the remaining developable land in the Woodward Distribution Planning Area (DPA). The Woodward DPA serves the northeastern portion of the City of Fresno and the northwestern portion of the City of Clovis. This heavily residential and commercial area consists primarily of large subdivisions and commercial developments (Transcon 2010).

The Woodward DPA has a historically high rate of growth due to continued commercial development. In addition, the City of Clovis is preparing the Northwest Urban Village Specific Plan. Although development has been slowed due to current economic conditions, this area is anticipated to continue to grow rapidly due to the desirability of the area and its school district. Current and projected loads of the Woodward DPA are detailed in Table 2.2-1.

Figure 2.1-1: Project Layout

Table 2.2-1: Current and Projected Loads of the Woodward DPA	
Characteristic	**Rate**
Current Capacity	339.0 megawatts (MW)
2012 Projected Load	322.6 MW
2014 Projected Load (Based on 1-4-12 Load Growth Projection)[1]	340.9 MW
2015 Projected Load (Based on 1-4-12 Load Growth Projection)[1]	345.6 MW
Note: [1.] PG&E uses a program of voluntary reduction in electricity use, known as Customer Energy Efficiency (CEE). For any given planning area, the historical CEE energy and peak demand impacts have been subsumed within the peak load demands experienced year by year and, thus, their reductions are included in the forecasts of peak growth.	

SOURCE: PG&E 2012

The Woodward DPA is currently served by four existing 115/21-kV substations, which are identified in Table 2.2-2. All existing substations are fully utilized. A new substation is needed to accommodate existing and future growth from the remaining developable land. To best serve the system's load, any new substation must be located such that it is connected to the 21-kV system from Clovis Substation, which is isolated from the rest of the 21-kV system in the Woodward DPA.

Table 2.2-2: Existing Substations in the Woodward DPA		
Substation	**Transformers**	**Area Served**
Bullard	One 115/21-kV, 45-MVA transformer	Woodward DPA
	Two 115/12-kV, 45-MVA transformers	Central Fresno DPA
Clovis	One 115/21-kV, 45-MVA transformer	Woodward DPA
	Two 115/12-kV, 45-MVA transformers	Clovis DPA
Pinedale	Three 115/21-kV, 45-MVA transformers	Woodward DPA
Woodward	Three 115/21-kV, 45-MVA transformers	Woodward DPA

SOURCE: Transcon 2010

2.2.3 PROJECT BENEFITS

Operation of the Shepherd Substation would increase distribution capacity to serve electric customers in the cities of Clovis and Fresno and in unincorporated portions of Fresno County during peak demand conditions. The proposed project would support the connection of new residential and commercial customers and increase emergency capacity and reliability for existing customers.

2.3 PROJECT LOCATION AND REGIONAL CONTEXT

2.3.1 PROJECT LOCATION

The proposed project is located just north of the City of Clovis, within an unincorporated area of Fresno County, California. Table 2.3-1 includes the Township, Range, and Sections in which the substation and power line interconnection would be located. Figure 2.3-1 shows an overview of the project area in terms of the Public Land Survey System legal description (Section, Township, and Range).

Table 2.3-1: Project Component Legal Description[1]

Project Component	Section(s)	Township	Range
Shepherd Substation	20	12 South	21 East
Power Line Interconnection	17 and 20	12 South	21 East
Distribution Lines	20, 21, 28, and 29	12 South	21 East

Note:
1. Mount Diablo Baseline and Meridian, U.S. Geological Survey 7.5-minute quadrangle maps (Friant and Clovis).

Substation

The proposed substation would be located at the southwest corner of Sunnyside Avenue and Perrin Avenue in Fresno County. The area of the proposed substation is currently used as an almond orchard. The substation would be within the almond orchard and set back from the existing right-of-way for N. Sunnyside Avenue by approximately 65 feet and from the northern border of the property to East Perrin Avenue by approximately 75 feet. Figure 2.3-2 shows the proposed substation location.

115-kV Power Line

The proposed 115-kV power line interconnection would be approximately 1.5 miles long. Figures 2.3-3, 2.3-4, and 2.3-5 show the approximate alignment of the proposed power line. The 115-kV power line would extend east from the north side of the substation to Sunnyside Avenue. It would then extend north along the west side of Sunnyside Avenue and would be located approximately 15 feet west of the existing distribution line alignment. From Sunnyside Avenue, the power line alignment would be located along the eastern edge of a retention/infiltration basin managed by the Fresno Metropolitan Flood Control District. The power line would then span Behymer Avenue and continue north through an agricultural area. The existing distribution line alignment ends approximately 0.87 mile north of Perrin Road. The new power line would extend approximately 0.63 mile beyond the end of the existing distribution right-of-way (ROW) through private properties to E. Copper Avenue where it would interconnect with the existing Kerckhoff-Clovis-Sanger #1 115-kV Power Line. The existing distribution line would be extended north to E. Copper Avenue as under-

Figure 2.3-1: Project Location, Section, Township, and Range

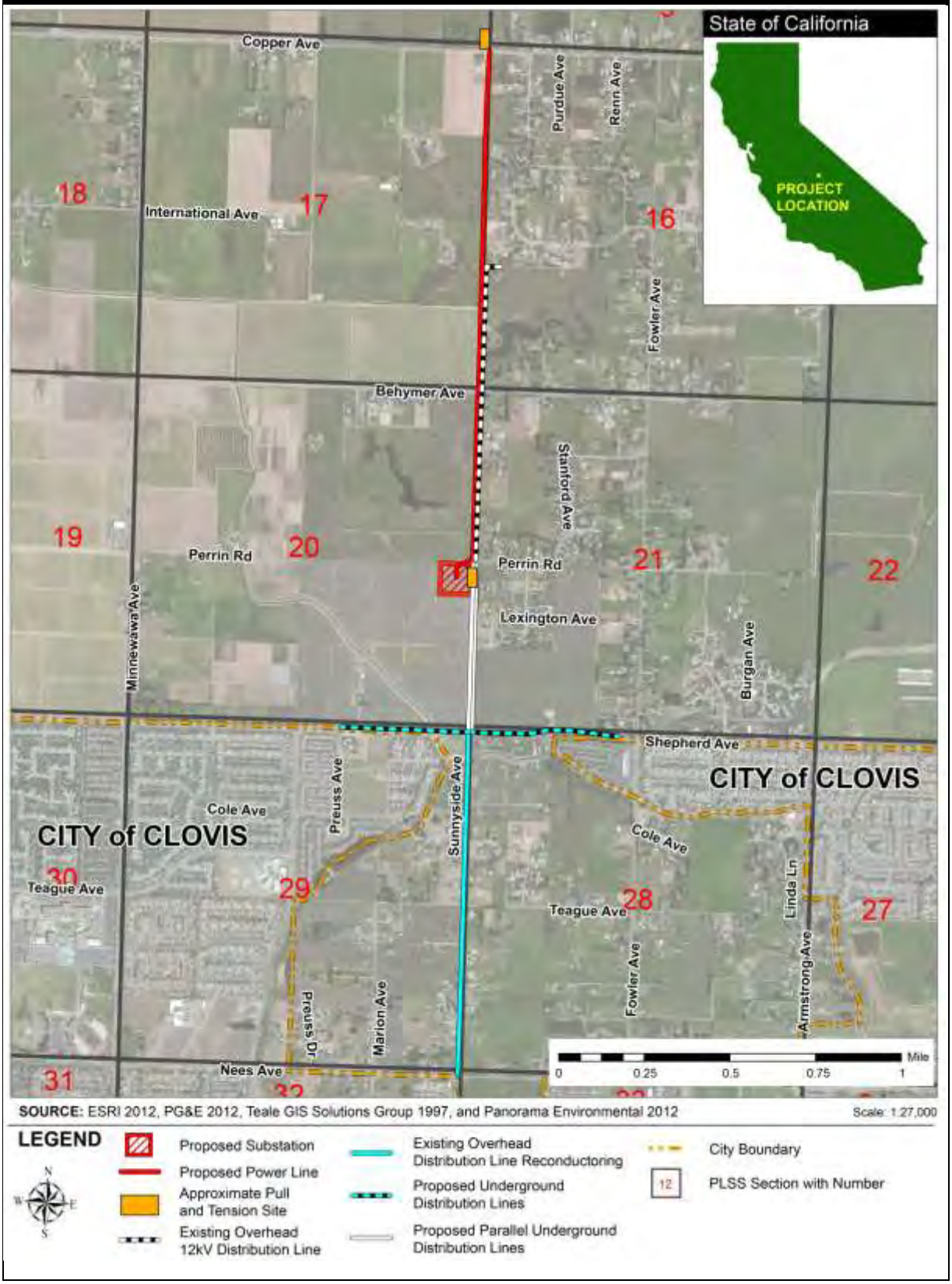


Figure 2.3-2: Substation Location

Figure 2.3-3: Proposed Power Line and Distribution Line Alignments

Figure 2.3-4: Proposed Power Line and Distribution Line Alignments Map 1

Figure 2.3-5: Proposed Power Line and Distribution Line Alignments Map 2

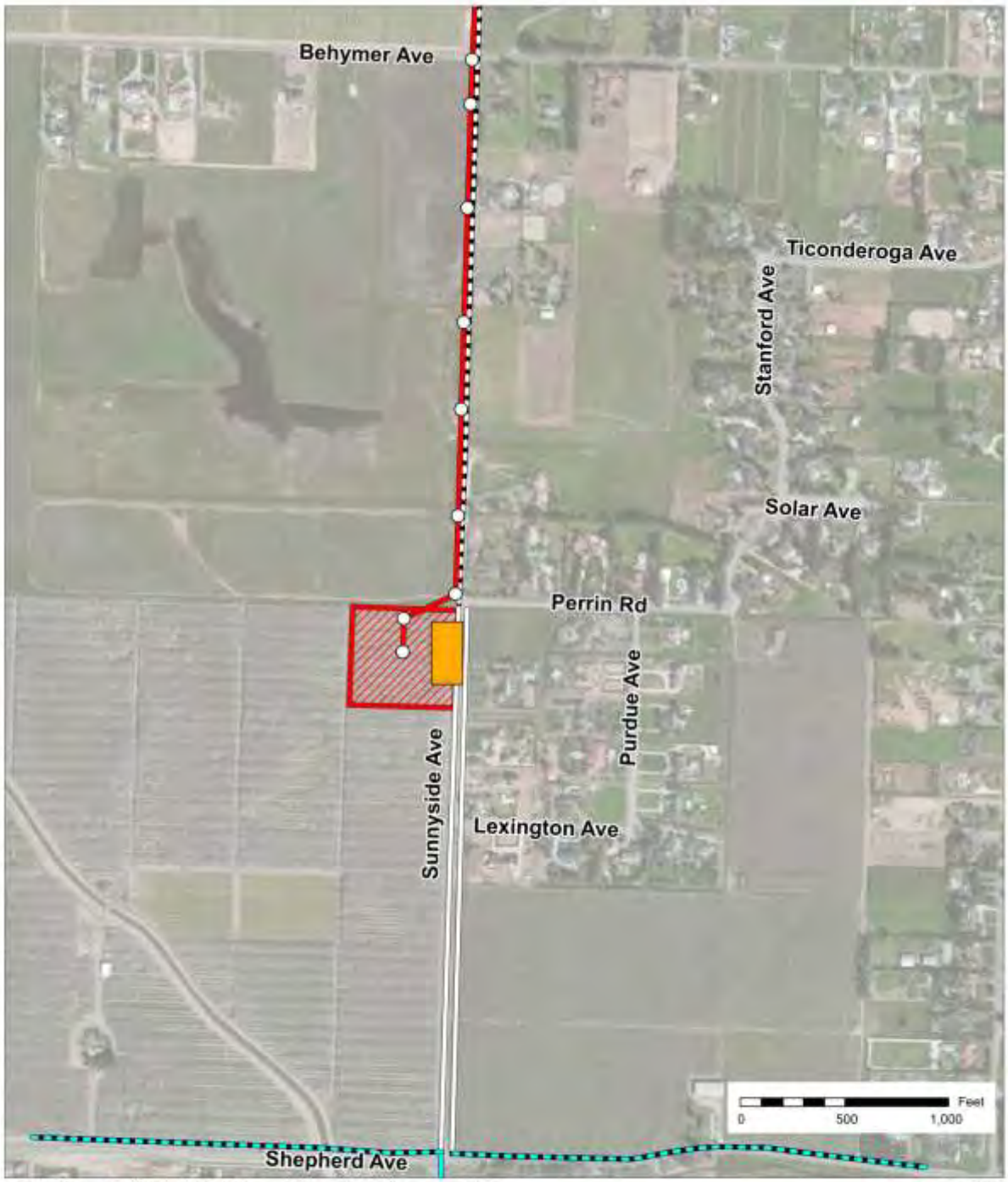


Figure 2.3-6: Proposed Power Line and Distribution Line Alignments Map 3

build along the new 115-kV power line. The new power line would have a ROW width of 60 feet to accommodate the 115-kV line.

Shepherd Avenue West 21-kV Distribution Line

The proposed Shepherd Avenue West 21-kV distribution line would extend underground approximately 0.5 mile south from Shepherd Substation along the west side of Sunnyside Avenue to Shepherd Avenue. The distribution line would then extend underground west approximately 0.4 mile along the north side of Shepherd Avenue to intercept an existing distribution line. This distribution line would be bored underneath Enterprise Canal. Figures 2.3-3 and 2.3-5 show the alignment of the proposed Shepherd Avenue West 21-kV distribution line.

Sunnyside Avenue South 21-kV Distribution Line

The proposed Sunnyside Avenue South 21-kV distribution line would be collocated along Sunnyside Avenue in the same trench as the Shepherd Avenue West distribution line. This distribution line would be bored underneath Shepherd Avenue and would rise onto wood poles south of Shepherd Avenue. The 21-kV distribution line would extend above ground for approximately 1.0 mile between Shepherd Avenue and Nees Avenue, and would replace the existing 12-kV aboveground distribution line (the line would be reconductored). Figures 2.3-3, 2.3-5, and 2.3-6 show the alignment of the proposed Sunnyside Avenue South 21-kV distribution line.

Shepherd Avenue East 12-kV Distribution Line

The proposed Shepherd Avenue East 12-kV distribution line would be bored underneath Sunnyside Avenue and would extend underground south along the east side of Sunnyside Avenue for approximately 0.5 mile to Shepherd Avenue. The distribution line would then extend east underground for approximately 0.5 mile along the north side of Shepherd Avenue to intercept an existing 12-kV distribution line. Figures 2.3-3 and 2.3-5 show the alignment of the proposed Shepherd Avenue East 12-kV distribution line.

2.3.2 REGIONAL CONTEXT

The proposed substation location area has historically been cultivated and is currently operated as an almond orchard. Existing land uses vary around the orchard but are typically associated with a rural or low-density residential and agricultural character. The land immediately north of the proposed substation site is undeveloped, and further north is a Fresno Metropolitan Flood Control District water retention/infiltration basin. The almond orchard extends to the south and west of the proposed substation area.

Land uses along the proposed power line alignment include a mix of low-density residential housing, agricultural lands, and undeveloped land. The 115-kV power line would be built along property lines and along existing fence lines. Land uses along the proposed distribution lines include low-density residential housing, medium-density residential housing, commercial, parks and recreation, agricultural lands, and undeveloped land. The

distribution lines would be built underground except for a segment along Sunnyside Avenue that would replace an existing aboveground distribution line.

2.4 PROJECT COMPONENTS

2.4.1 SHEPHERD SUBSTATION

The proposed 115/21-kV Shepherd Substation is planned as an unmanned, automated, low-profile electrical substation that would require only periodic maintenance. Figure 2.4-1 shows the preliminary layout of Shepherd Substation.

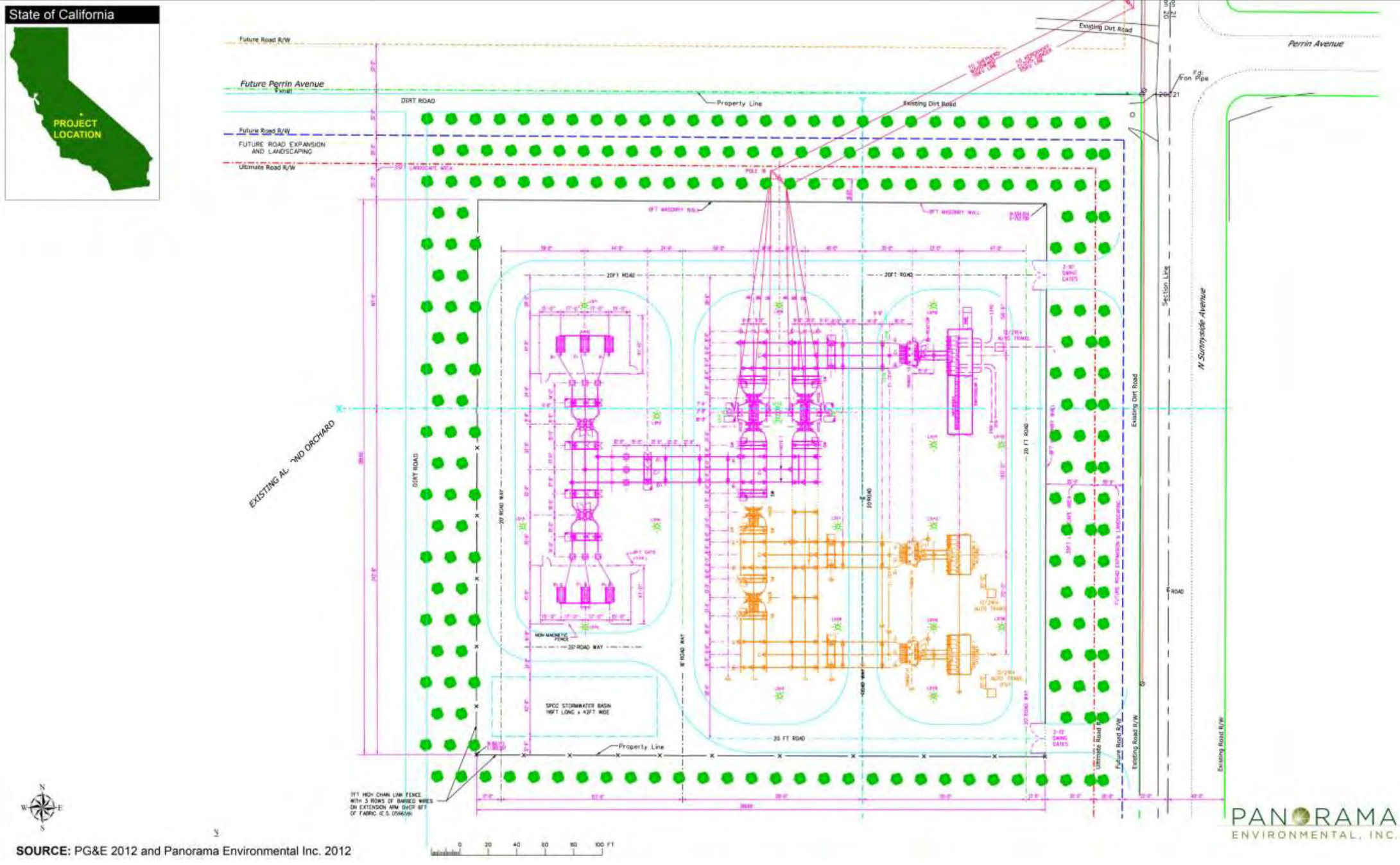
Electrical power would enter the substation through the proposed power line, which would extend from the existing PG&E Kerckhoff-Clovis-Sanger #1 115-kV Power Line that parallels the south side of E. Copper Avenue. Power would leave the substation at 21/12-kV through three distribution feeder lines that would interconnect with the existing electrical distribution network. The proposed substation would include the following components:

- New 115/21-kV distribution substation, with three 45-MVA transformers at full build out
- Up to three distribution circuits per transformer leaving the substation in underground conduits and either transitioning to an overhead position or remaining underground
- A 21/12-kV transformer
- Two paved access roads from Sunnyside Avenue to the substation
- A stormwater detention and Spill Prevention Control Countermeasure (SPCC) basin

The dimensions of the substation would be approximately 390 feet by 399 feet, entirely situated within the approximately 5-acre (roughly 466 feet by 466 feet) parcel owned by PG&E. The substation would include up to three approximately 35-foot-tall dead-end structures supporting the 115-kV power line. It would also include transformers, switches, and buswork that would be approximately 15 feet tall. A neutral-colored, pre-fabricated, 10-foot-high concrete wall would be constructed around the north and east sides of the substation and a chain-link fence would be erected along the remaining sides. The chain-link fence would be 8 feet high, with 1 foot of barbed wire extending above the fence. To create a vegetative screen, PG&E would leave three rows of almond trees between the substation fence and Sunnyside Avenue, as well as three rows of almond trees along the north side of the substation. A groundwater well would likely be constructed within the 5-acre parcel to provide a water source for the remaining almond trees.

Because the proposed project would disturb more than 1 acre of land, PG&E would develop a Stormwater Pollution Prevention Plan (SWPPP) and would comply with all applicable National Pollution Discharge Elimination System (NPDES) construction stormwater permit requirements. A stormwater detention basin would be constructed within the 5-acre substation parcel. The basin would be engineered to follow acceptable industry standards as

Figure 2.4-1: Preliminary Layout of Shepherd Substation



SOURCE: PG&E 2012 and Panorama Environmental Inc. 2012

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well as the Fresno County basin capacity criteria and design standards. Best Management Practices (BMPs) developed by PG&E for substation construction would also be followed.

Security lighting would be installed for safety and security. Security lighting would consist of sodium vapor lamps and all exterior lighting would use non-glare light bulbs, designed and positioned to minimize casting light and/or glare to off-site locations. Light poles placed at each corner of the substation would be approximately 10 feet tall and constructed of galvanized steel. The lights would be controlled by a photocell that automatically turns the lights off during the day and on at night.

PG&E may construct a groundwater well within the 5-acre parcel to provide a source of water for the remaining almond trees on the north and east sides of the parcel. If a well is necessary, PG&E will obtain all necessary permits and comply with applicable requirements.

2.4.2 POWER LINE INTERCONNECTION

A proposed double-circuit, 115-kV power line would link the existing Kerckhoff-Clovis-Sanger #1 115-kV Power Line to the proposed substation (Figure 2.3-3). The proposed power line interconnection would be approximately 1.5 miles long, and would be constructed from Shepherd Substation north to E. Copper Avenue. An existing 12-kV distribution line extends approximately 1 mile north from the proposed substation site. The existing distribution line would be moved to the new 115-kV power line as under-build. Wood poles for the existing distribution line would be removed, where feasible, and disposed of as described below.

Power Line Poles

Two types of poles would be installed for the proposed power line: 1) tubular steel poles (TSP) and (2) a drop-down pole. Power line pole characteristics are described in Table 2.4-1. Figure 2.4-2 depicts a typical TSP and drop-down pole.

The preliminary power line design would span the north side of the substation from a turning structure located along Sunnyside Avenue to a single TSP at the northern edge of the substation. Each circuit would then angle south to drop down to a dead-end structure (where PG&E terminates its power line conductors) within the substation. The dead-end structure would be approximately 35 feet tall.

The new power line alignment would be located approximately 15 feet west of an existing 12-kV distribution line alignment from Shepherd Substation to approximately 0.5 mile north of Behymer Avenue. The existing distribution line would be collocated on the new power line structures.

Removed distribution line wood poles would be completely removed and recycled, reused, or disposed of at a landfill facility that is authorized to accept treated wood pole waste in accordance with California Health and Safety Code Section 25143.1.5(b). Where necessary, to maintain service to existing customers, wood poles would be preserved in place.

Table 2.4-1: Power Line Design Characteristics (Approximate and Preliminary)		
Feature	**Tubular Steel Pole**	**Drop-down Pole at Substation**
Structure Height[1]	90-100 feet	70 feet
Structure Width	2-4 feet in diameter	2-3 feet in diameter
Foundation Width	5-6 feet in diameter	5-6 feet in diameter
Structure Foundation	Cast-in-place concrete foundations, 21-30 feet deep	Cast-in-place concrete foundations, 21-30 feet deep
Span length	500-600 feet	500-600 feet
Notes: [1] Aboveground height.		

SOURCE: Transcon 2010

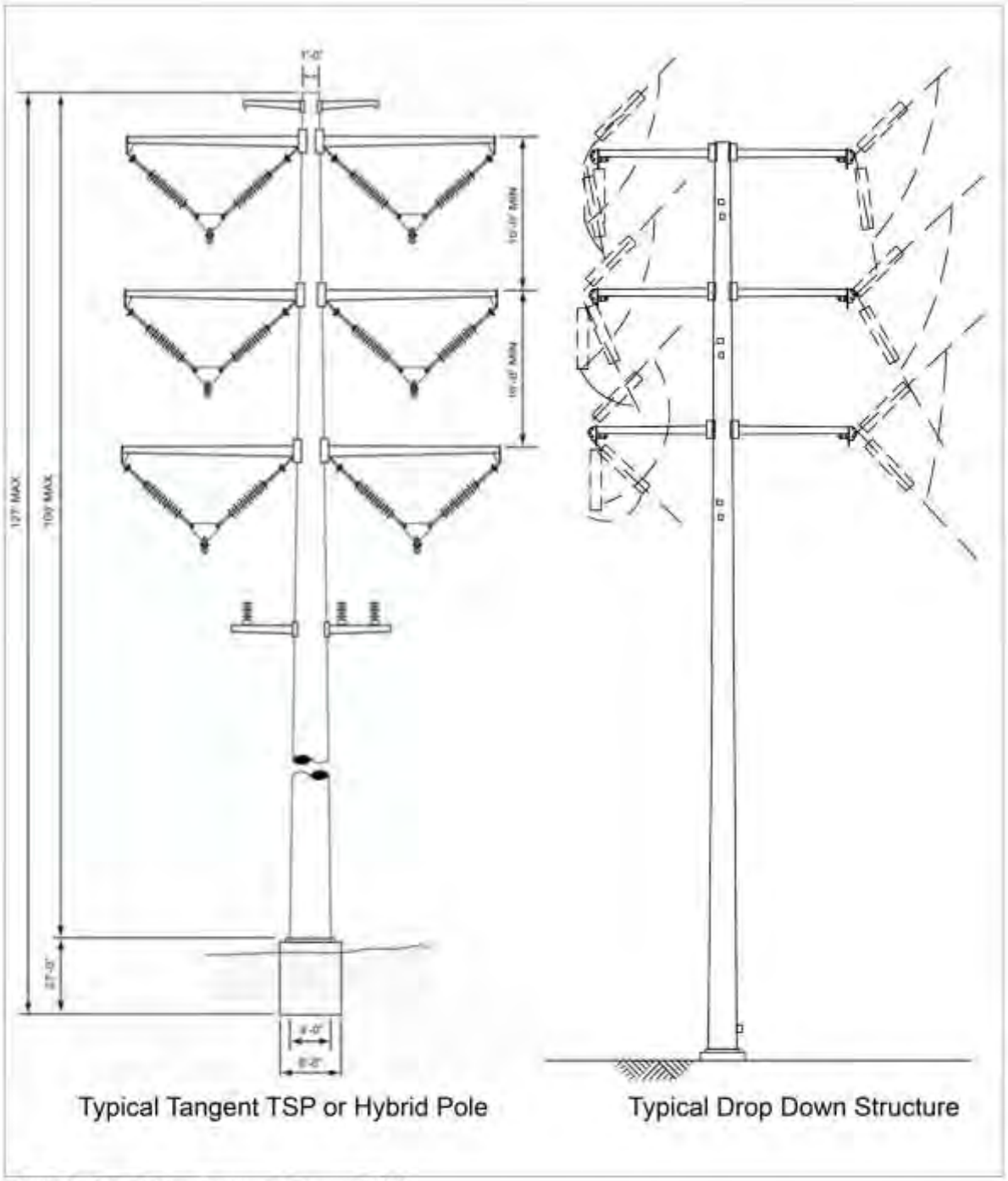
Conductor

The proposed power line would include the installation of approximately 61 strands of non-specular, all aluminum conductor. The conductor would be installed in a double circuit, with one conductor per phase with three phases for each circuit in a vertical configuration (Figure 2.4-2). The conductor has a diameter of approximately 1.75 inches and weighs approximately 2.177 pounds per foot. The conductor would comply with the General Order (GO) 95 requirement to have a minimum ground clearance of 30 feet. Horizontal distance between conductors would be a minimum of approximately 15 feet at each structure and a minimum of approximately 10 feet in span. Vertical distance between conductors would be 10 feet minimum.

2.4.3 DISTRIBUTION FEEDER LINES

Two 21-kV distribution lines and one 12-kV distribution line are planned to link the proposed substation to the existing distribution system south of the substation (Figures 2.3-3, 2.3-5, and 2.3-6). Each distribution line would be approximately 1 to 1.5 miles in length and would be constructed within an underground trench from the proposed substation to Sunnyside Avenue. Two 21-kV distribution lines would be constructed within the same trench along the west side of Sunnyside Avenue to Shepherd Avenue. From Shepherd Avenue one distribution line would remain underground heading west along Shepherd Avenue to an existing power line. At the crossing of Enterprise Canal, the distribution line would be bored underneath the canal. The other distribution line would be bored underneath Shepherd Avenue and would rise onto wood poles following along the west side of Sunnyside Avenue within an existing distribution line alignment. The 12-kV distribution line would be bored underneath Sunnyside Avenue and would be constructed underground along the east side of Sunnyside Avenue to Shepherd Avenue where it would head underground east along the north side of Shepherd Avenue.

Figure 2.4-2: Typical Tubular Steel Pole (TSP) and Dropdown Structure



SOURCE: PG&E 2010 and Panorama Environmental 2012

2.5 CONSTRUCTION ACTIVITIES

2.5.1 CONSTRUCTION SEQUENCE AND METHODS

Although substation construction, power line interconnection construction and distribution feeder line construction would occur simultaneously, project construction would generally follow the order listed below:

1. Substation Construction
    a. Land clearing, rough grading, and compaction of subgrade
    b. Installation of security fence
    c. Excavation of foundations, raceways, and ducts
    d. Installation of grounding grid
    e. Construction of the buswork structure
    f. Installation of facilities

2. Power Line Interconnection Construction
    a. Pole foundation excavation and installation
    b. Structure assembly and erection
    c. Conductor and ground wire stringing
    d. Collocation of distribution line

3. Distribution Feeder Lines Construction
    a. Pole removal and replacement
    b. Installation of distribution circuits

4. Cleanup Activities

Construction material for the substation, power line, and distribution lines would be staged within the boundaries of the proposed Shepherd Substation, at PG&E's existing Gregg Substation in Madera or, for short periods, along the project route. No additional areas would be required to stage materials. Materials would be moved from the substation to the work site on a daily basis and no additional laydown areas are proposed.

Substation Construction

The substation would be constructed on an approximately 466-feet by 466-feet (approximately 5-acre) parcel of land currently operated as an almond orchard. Substation construction would begin by clearing almond trees within the 5-acre parcel. Three rows of tress would remain on the north and east sides of the parcel to provide some visual screening of the facility. Removed trees would be disposed of in accordance with applicable rules and regulations. Once trees are cleared, the site would be graded and compacted to establish a flat surface for construction and provide proper drainage. All grading would be in compliance with Fresno County ministerial grading requirements. Based on preliminary designs, approximately 8,500 cubic yards of clean, compacted fill would be imported to raise the elevation of the site to avoid inundation from periodic flood irrigation of the surrounding

almond orchard. The structure foundations would be approximately 6 inches above final grade and the grading would range from current grade to approximately 2 feet above current grade within the 5-acre parcel.

A perimeter enclosure with two access gates would be constructed around the substation perimeter for security. An 8-foot-high chain-link fence with 1 foot of barbed wire would be installed on two sides (south and west) and a 10-foot-high pre-fabricated concrete wall would be installed on the other two sides (north and east), with almond trees located outside of the wall. Two entrances to the substation would be located along Sunnyside Avenue at the north and south ends of the substation. One two-door, 10-foot-high swing gate would be installed at each entrance (Figure 2.4-1)

Below-grade construction would occur following site preparation. PG&E would construct foundations, a stormwater detention and Spill Prevention Control and Countermeasure (SPCC) basin, raceways, and underground conduit. Reinforced concrete subsurface footings and concrete slabs would be installed along with the ground grid. Substation equipment foundations would be approximately 5-16 feet deep.

Aboveground steel structures, circuit breakers, transformers, switchgears, buses, and other electrical equipment would be installed once the below-grade construction is complete. Equipment would be bolted or welded to slabs and footings and connected to the ground grid. The maximum height of substation equipment would be approximately 35 feet for the dead-end structures supporting the 115-kV power line interconnection. The transformers, switches, and buswork would be approximately 15 feet tall. Substation structures and equipment would be a neutral gray color.

At full build out, the substation would include three 45-MVA transformers, each containing approximately 6,000 gallons of mineral oil (the mineral oil does not contain polychlorinated biphenyls). The SPCC basin would be sufficiently sized to contain the transformer mineral oil from the largest transformer in the case of an accidental spill.

PG&E would construct two paved, 20-foot-wide access roads between Sunnyside Avenue and the substation. The roads would be at the north and south ends of the substation and would be approximately 35 feet long. Access roads and roads within the substation would be paved.

Security lighting would be installed for safety and security. Security lighting would consist of sodium vapor lamps and all exterior lighting would use non-glare light bulbs, designed and positioned to minimize casting light and/or glare to off-site locations. Light poles placed at each corner of the substation would be approximately 10 feet high and constructed of galvanized steel. The lights would be controlled by a photocell that automatically turns the lights off during the day and on at night.

Power Line Interconnection Construction

Foundation Excavation and Installation

A tracked power auger would be used to excavate holes to a depth of approximately 21 to 30 feet for pole placement. Approximately 848 cubic feet of soil would be excavated and replaced with approximately the same volume of concrete where foundations are installed. A boom truck would be used to set rebar cage and anchor bolts. Any holes that are required to be left open overnight would be covered and secured. Concrete pole foundations would be cast in place following excavation. Grading would not be required for these activities.

Foundation excavation would require access to structure sites by a power auger or drill, material truck, and ready-mix concrete truck. Access is discussed in Section 2.5.3 below. Soils left over after poles have been erected would be spread at the structure location or, if necessary, transported for off-site disposal in accordance with applicable laws.

Structure Assembly and Erection

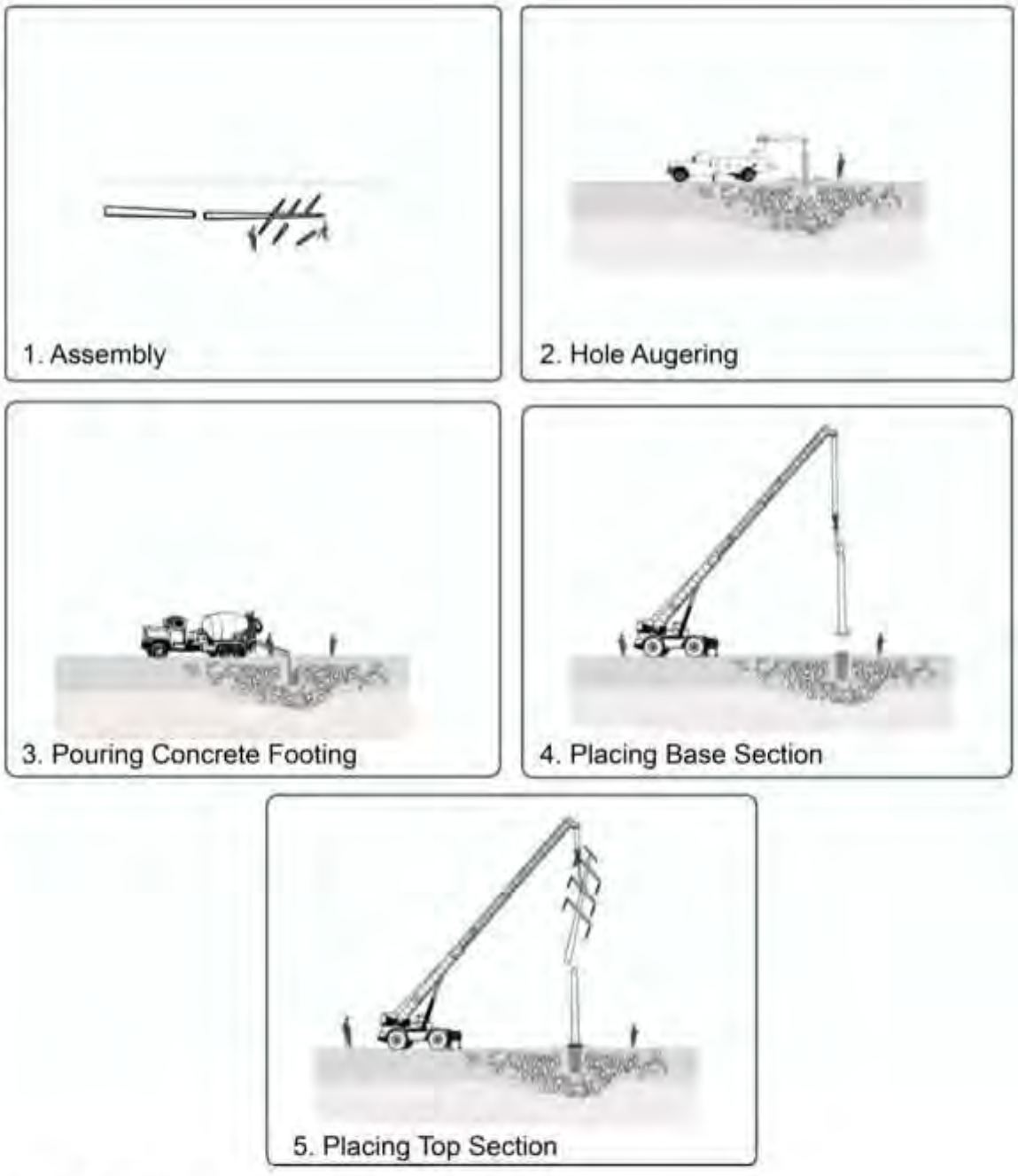
Pole structure assembly and erection activities include mobilizing construction vehicles, equipment, and poles along existing roads and ROWs, and assembling and erecting the structures. Sections of new structures and associated hardware would be delivered by flatbed truck to each structure site where erection crews would add the cross arms and, using a large crane, position structures onto their foundations. Typical TSP installation is depicted in Figure 2.5-1.

Conductor Stringing

Once poles are erected, conductor would be strung from conductor pull and tension sites at the end of the power line interconnection alignment. Each site would be approximately 1 acre in size. The southern pull site would be located within the 5-acre substation parcel or along N. Sunnyside Avenue. The northern pull site would be located in an agricultural field on the north side of E. Copper Avenue. Reels of conductor would be delivered to the pull and tension sites and, because the area is level, little or no earth-moving would be required to provide access. Sites free of woody vegetation would be selected, if possible, to avoid unnecessary vegetation removal. The conductors would be attached to the power poles and then pulled into place from these locations.

Crews would then install insulators and sheaves. Sheaves are rollers attached to the lower end of the insulators at the end of each pole structure cross-arm. The sheaves allow crews to pull sock lines, rope, or wire used to pull power line interconnection conductors into place. Once the equipment is set up, a lightweight vehicle would pull the sock line from one pole to the next. At each pole, the sock line would be hoisted to the cross-arm and passed through the sheaves on the ends of the insulators. Conductor would then be attached to the sock line and pulled through each supporting structure while under tension. Once each conductor is pulled into place, it would be pulled to a pre-calculated sag and then tension-clamped to the

Figure 2.5-1: Typical Tubular Steel Pole (TSP) Installation



SOURCE: PG&E 2010 and Panorama Environmental 2012

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end of each insulator. The final step of the conductor installation process would be to remove the sheaves and install vibration dampers and accessories.

Prior to pulling and tensioning, workers would install temporary guard structures where the line crosses Behymer Avenue to prevent sock line or conductors from dropping onto the road.

Collocation of Distribution Line

The approximately 1 mile of existing distribution line along the proposed power line alignment would be moved onto the new power line structures and extended to E. Copper Avenue. The existing distribution line wood poles would be removed except those needed to maintain service to local customers. A boom truck would be used to loosen old poles as needed and to pull the old wooden poles directly out of the ground. Old poles, associated hardware, and any other debris would be completely removed and recycled, reused, or disposed of at a landfill facility that is authorized to accept treated wood pole waste in accordance with California Health and Safety Code Section 25143.1.5(b). The distribution line would be installed on the new power line structures in the under-build position below the power line.

Distribution Feeder Lines Construction

The 21/12-kV distribution feeder lines would be placed in underground conduit within the substation. Initially, four distribution feeder lines are planned for the substation, but distribution lines would be added for areas of demand on an as-needed, to-be-determined basis. Extending south from the substation, three of the distribution feeder lines will be underground as they leave the substation, with one of those lines transitioning above ground at Sunnyside Avenue to tie into an approximately one-mile portion of an existing distribution line. The fourth distribution feeder line, an existing overhead line leading north from the substation, will be extended north to Copper Avenue as underbuild along the new 115-kV power line.

Trenching

Trenching for the distribution lines would involve excavating with a backhoe a trench approximately 18 inches wide and a minimum of approximately 42 inches deep. The material from the trench would be sidecast onto adjacent soil within the County franchise area/ROW. The County franchise area where work would be conducted consists of an approximately 10-foot-wide unpaved area adjacent to County roads. Once the trench is excavated, cable and conduit would be installed. When the trench is ready for backfilling, the trench would be filled with the excavated soil and the soil would be compacted to meet engineering standards. In-ground splice boxes, which are approximately 5.5 feet by 9.5 feet by 7 feet deep, would be installed as necessary along the distribution lines. An estimated 18 in-ground splice boxes would be required. Equipment required for trenching of the distribution lines would work off-road where feasible; however, some lane closures may be required during project construction. PG&E would implement a traffic control plan to manage traffic around work areas.

Drilling

One of two drilling methods would be used to install the distribution lines underneath Enterprise Canal and at roadway crossings. Drilling methods could include horizontal directional drilling (HDD) or jack-and-bore. HDD uses a hydraulically powered horizontal drilling rig operating from the ground to bore beneath the surface. During boring activities, drilling fluid is pumped under high pressure through the drill stem to rotate the cutting head and return the soils to a pit at the entry point. Drilling fluids consist of a water/bentonite (dehydrated clay) mixture. The HDD contractor would be responsible for proper disposal of any soil cuttings, drilling mud, fluids, or waste in accordance with all federal, state, and local regulations. Once the hole is drilled, the polyvinyl chloride (PVC) conduit that would hold the underground distribution line would be pulled through the borehole.

Infrequently, the high-pressure drilling mud used during HDD escapes to the surface because of unanticipated soil properties. This is referred to as "fracturing-out" (frac-out). PG&E would implement BMPs outlined in the PG&E Horizontal Directional Drilling Manual to prevent or contain frac-outs.

The jack-and-bore drilling method requires excavating an entry and an exit pit, each approximately 24 feet long by 16 feet wide by 6 feet deep, using an excavator or a backhoe. The walls would be shored if needed before the boring machine is lowered into the entry pit. The boring machine would push (i.e., jack) a steel casing horizontally through the soil while at the same time removing earth in the casing with a rotating auger. The auger carries loose soil through the auger and back to the entry pit where it is shoveled out of the pit. Once the casing is installed, conduits that would hold the underground distribution line would be assembled and pulled through the steel casings.

Overhead Distribution Line

For the portion of the Sunnyside Avenue South 21-kV distribution line that would be overhead, the existing wood poles for the 12-kV distribution line would be replaced with new wood poles approximately 45 feet tall. The existing wood poles are approximately 34 to 40 feet tall, and would be completely removed and recycled, reused, or disposed of at a landfill facility that is authorized to accept treated wood pole waste in accordance with California Health and Safety Code Section 25143.1.5(b). New wood poles would be installed within 5 feet of the existing wood poles, unless existing aboveground or below-ground conditions render an alternative location necessary. Should an alternate location be required, PG&E would select a location for the new pole that is within the County franchise area and as close to the existing poles as required by project needs. Poles would be replaced on an approximately 1:1 basis. One pull and one tension site would be necessary for the new overhead distribution line. Each pull and tension site would be approximately 50 feet by 100 feet (0.05 acre). The sites would be located at the north and south ends of the distribution line.

Cleanup Activities

PG&E would ensure that the construction site is kept clean during the construction period. Trash would be picked up daily and either removed from the work site or properly contained. A final cleanup of the work area would be performed upon completion of construction activities. Final grading would ensure that contours match those of the surrounding area. Re-seeding or other restoration would be conducted as necessary to restore temporarily disturbed areas. Revegetation and site restoration including repaving of driveways and repairs to any other disturbed structures would be conducted along the underground distribution line alignments. Site restoration activities would be conducted to match the pre-project conditions of the area in temporarily disturbed areas. PG&E would repair or replace any fences damaged through construction of the power line.

2.5.2 ESTIMATED GROUND DISTURBANCE

Estimates of ground disturbance associated with construction and operation of the project are summarized in Table 2.5-1.

2.5.3 CONSTRUCTION ACCESS

Where the power line alignment is located along property lines in roadless areas (i.e., between Behymer Avenue and E. Copper Avenue), vehicles and equipment would travel down the center of the ROW, or as close as possible while avoiding sensitive areas. Entrance to private property would be obtained from the property owner and entryways for equipment may be added to existing fences. No access roads would be constructed. The area is flat, so grading and earthwork to allow for equipment access to pole locations is not expected. Existing roads would be used where present. Heavy construction vehicles and equipment would require access to the location of each new structure, but not necessarily along the length of the entire alignment between structures. Local roads such as N. Sunnyside Avenue, Behymer Avenue, and E. Copper Avenue provide access to points along the alignment. Unpaved roadways along the retention/infiltration basin would also be used.

2.5.4 CONSTRUCTION PERSONNEL AND EQUIPMENT

Construction of the project would be conducted in stages. For this reason, personnel would conduct multiple functions, and equipment would access the various work locations on multiple trips. All material would be delivered to the staging area by truck. During construction of the substation, power line, and distribution lines, a traffic control plan would be implemented for temporary obstructions along roadways. Truck trips are estimated to peak during the transport of clean fill for substation construction. Estimated truck trips at the peak period would be approximately 40 to 45 round-trips of heavy-duty trucks per day. This peak period is expected to last approximately two weeks.

Typical equipment used during substation construction and for maintenance operations is summarized in Table 2.5-2. Table 2.5-3 and Table 2.5-4 provide the same information for power line interconnection and distribution line interconnection construction, respectively.

Table 2.5-1: Estimated Ground Disturbance

Project Feature	Estimated Ground Disturbance per Site	Number of Sites	Total Estimated Temporary Disturbance Area	Total Estimated Permanent Disturbance Area
Substation	5 acres	1	5.00 acres	5.00 acres
TSPs	50-foot radius	17	3.06 acres	0.17 acre
Drop-down Poles	50-foot radius	1	0.18 acre	0.01 acre
Power Line Stringing Setup Areas (Pull and Tension Sites)	150 feet x 300 feet	2*	1.03 acres	—
Underground Distribution Circuits	15,200 linear feet x 40 feet	1	14.00 acres	—
Distribution Line Wood Pole Replacement	40 feet x 100 feet	30	2.7 acres	0.01 acre
Distribution Stringing Setup Areas (Pull and Tension Sites)	50 feet x 10 feet	2	0.10 acre	—
In-ground vaults	5.5 feet x 9.5 feet	18	0.02 acre	0.02 acre
Total			27.17 acres	5.10 acres

*The acreage for the pull and tension site within the substation is accounted for in the temporary disturbance for the substation.

SOURCE: Transcon 2010; Transcon 2011; PG&E 2012

Table 2.5-2: Substation Personnel and Equipment

Primary Equipment Description	Primary Equipment Quantity	Estimated Number of Personnel	Estimated Activity Schedule	Estimated Usage per Day
Grading				
Water Truck	1	8	18 days	4 hours
1/2-Ton Truck, 4x4	2			2 hours
980 Loader	1			8 hours
Grader	1			8 hours

Table 2.5-2 *(Continued)*: Substation Personnel and Equipment				
Primary Equipment Description	**Primary Equipment Quantity**	**Number of Personnel**	**Estimated Activity Schedule**	**Estimated Usage per Day**
Vibratory Compactor	1			6 hours
Survey				
1/2-Ton Truck, 4x4	2	2	5 days	8 hours
Civil (Foundation, Underground Conduit, Grounding Grid, etc.)				
1-Ton Crew Truck, 4x4	2	8	18 days	4 hours
Fork Lift	1			2 hours
Dump Truck	1			1 hour
Stake Bed Truck	1			2 hours
Drill Rig	2			2 hours
Tractor	1			3 hours
Trencher	1			4 hours
Electrical (Mechanical and Electrical Equipment Room [MEER], Switch Racks, Conductor, Circuit, Breakers, etc.)				
1-Ton Crew Truck, 4x4	2	12	80 days	4 hours
1/2-Ton Truck, 4x4	4			4 hours
Carryall Vehicle	2			4 hours
Crane	2			4 hours
Lift Truck	1			4 hours
Man Lift	2			4 hours
Transformer Setup				
1-Ton Crew Truck, 4x4	2	5	20 days	2 hours
Carryall Vehicle	1			2 hours
Crane	1			6 hours
Forklift	1			6 hours
Processing Trailer	1			12 hours
Low-bed Truck	1			4 hours

Table 2.5-2 *(Continued)*: Substation Personnel and Equipment				
Primary Equipment Description	**Primary Equipment Quantity**	**Number of Personnel**	**Estimated Activity Schedule**	**Estimated Usage per Day**
Test Facilities				
1/2-Ton Truck, 4x4	1	2	60 days	2 hours
Paving				
1-Ton Crew Truck, 4x4	1	8	20 days	4 hours
Dump Truck	2			6 hours
Road Paver	1			1 hour
Skip Loader	2			6 hours
Fence Construction				
1/2-Ton Truck, 4x4	1	6	20 days	4 hours
1-Ton Crew Truck, 4x4	1			4 hours
Bobcat	1			1 hour
3-Ton Flat Bed Truck	3			1 hour

SOURCE: Transcon 2010

Table 2.5-3: Power Line Personnel and Equipment				
Primary Equipment Description	**Primary Equipment Quantity**	**Number of Personnel**	**Estimated Activity Schedule**	**Estimated Usage per Day**
Survey				
1/2-Ton Truck, 4x4	4	4	1 day	5 hours
Install Foundations				
1-Ton Flat Bed Truck, 4x4	4	6	32 days	4 hours
70-Ton Crane Truck	1			7 hours
15 Ton Boom Truck	1			7 hours
Pole Haul				
35 to 40-Ton Crane	1	8	4 days	10 hours
40-Foot Flat-bed Truck/Trailer	2			10 hours

Table 2.5-3 *(Continued)*: Power Line Personnel and Equipment				
Primary Equipment Description	**Primary Equipment Quantity**	**Number of Personnel**	**Estimated Activity Schedule**	**Estimated Usage per Day**
Pole Assembly				
15-Ton Crane Truck	1	8	4 days	10 hours
1-Ton Flat-bed Truck, 4x4	1			10 hours
Conductor Single Circuit				
1-Ton Flat-bed Truck, 4x4	2	20	4 days	5 hours
Wire Truck/Trailer	1			10 hours
3/4-Ton Truck, 4x4	2			5 hours
30-Ton Manitex	2			10 hours
Static Tensioner	1			10 hours
3-Drum Puller	1			10 hours
30-lb 3-Drum Puller	1			10 hours
Restoration				
Road Grader	1	6	2 days	10 hours
Water Truck	4			2 hours
Lowboy Truck/Trailer	1			6 hours
Excavator	1			10 hours
Skip Loader	1			10 hours

SOURCE: Transcon 2010

Table 2.5-4: Distribution Line Personnel and Equipment

Primary Equipment Description	Primary Equipment Quantity	Number of Personnel	Estimated Activity Schedule	Estimated Usage per Day
Overhead Reconductoring				
Digger Derrick (Line Truck) with Cargo Trailer	1	6	1.5 months	2 hours
Bucket Truck	2			2 hours
Wire Dolly	1			2 hours at 1 time/week
Rope Truck (Tension)	1			2 hours at 1 time/week
¾-Ton Truck	1			2 hours
1.5-Ton Truck	1			2 hours
Underground Electric Installation				
Boom Truck	1	6	1.5 months	2 hours at 2 times/week
Wire Dolly	1			2 hours at 2 times/week
1.5-Ton Truck with Underdog (underground cable puller)	1			2 hours
¾-Ton Truck	1			2 hours
1.5-Ton Truck	1			2 hours
Line Truck	1			2 hours
Splice Van	1			2 hours at 2 times/week
Excavation: Trenching and Conduit Installation				
Water Truck (as needed)	1	5	2.5 months	2 hours
26,000-lb Gas Crew Truck with Trailer	1			2 hours

Table 2.5-4 *(Continued)*: Distribution Line Personnel and Equipment				
Primary Equipment Description	**Primary Equipment Quantity**	**Number of Personnel**	**Estimated Activity Schedule**	**Estimated Usage per Day**
1-Ton Truck	1			2 hours
10-Yard Dump Truck with Trailer	1			2 hours
Trencher	1			2 hours
Bore Rig	1			2 hours/bore 36 hours total

SOURCE: Transcon 2011

An estimated daily peak of 45 personnel would be involved in the construction of the substation, power line, and distribution lines. Multiple crews would be working simultaneously during construction of the proposed project.

2.6 CONSTRUCTION SCHEDULE

Construction is scheduled to begin in June of 2013 and is anticipated to take approximately 12 months to complete. The proposed construction schedule is included in Table 2.6-1.

Construction crews would work between 6:00 a.m. and 9:00 p.m. on weekdays, and may also work Saturday or Sunday between the hours of 7:00 a.m. and 5:00 p.m. Construction would only be conducted outside of these hours if it is required for project safety or to take advantage of the limited times when the power line can be taken out of service. Mitigation requirements may restrict work times on a conditional basis.

Table 2.6-1: Proposed Construction Schedule	
Project Activity	**Proposed Timeframe**
Construction starts	March 2014
Power and distribution line construction	August 2014 – June 2015
Substation construction	August 2014 – June 2015
Project operational	June 2015
Cleanup	June 2015 – March 2016
Total Duration	**March 2014 – March 2016**

SOURCE: PG&E 2012, Preliminary and Subject to Change

2.7 OPERATION AND MAINTENANCE

The operation of Shepherd Substation would be controlled remotely from PG&E's Fresno Control Center located approximately 10 miles southwest of the substation. The substation would be equipped with lead-acid batteries to provide backup power for monitoring, alarm, protective relaying, instrumentation and control, and emergency lighting during power outages. Routine inspections by substation personnel would occur monthly, or as needed under emergency conditions. Routine inspection would include inspection of hardware, insulator keys, and conductors. Equipment at Shepherd Substation would be inspected annually to allow the detection of problems with corrosion, equipment alignment, or foundations. Vegetation trimming would be conducted in accordance with CPUC's GO 95 (Rules for Overhead Electric Line Construction).

The power and distribution lines would be inspected annually. Routine maintenance would include replacing faulty insulators and tightening nuts and bolts, as needed. Under normal conditions, a more comprehensive inspection would be done every 3 to 5 years. In addition, power lines are sometimes damaged by storms, floods, vandalism, or accidents and require immediate repair. Emergency repair operations would involve the prompt deployment of crews to repair and replace damaged equipment.

2.8 REQUIRED APPROVALS

The CPUC is the lead state agency for project review under CEQA. Table 2.8-1 includes a summary of the permits and approvals from other federal, state, and local agencies that may be needed for the project.

Table 2.8-1: Summary of Potential Permits/Approvals

Agency	Permit/ Approval
California Department of Fish and Game	California Fish and Game Code, Section 2081
California Department of Transportation	Transportation Permit (oversized vehicles)
California Public Utilities Commission	Permit to Construct
California Regional Water Quality Control Board	NPDES Stormwater Permit
San Joaquin Valley Air Pollution Control District	Dust Control Plan
U.S. Fish and Wildlife Service	Endangered Species Act, Section 10

2.9 RIGHT-OF-WAY ACQUISITION

PG&E has purchased the property rights for the 5-acre substation site and will acquire additional easements as necessary for an approximately 60-foot-wide ROW for the power line interconnection. The distribution lines would be constructed entirely within County franchise area and a ROW would not be required.

Land entitlement issues are not part of the regulatory proceeding through which the CPUC is considering whether to grant or deny PG&E's application for a PTC. Rather, any land rights issues would be resolved in subsequent negotiations and/or condemnation proceedings (if necessary) in the proper jurisdiction following the decision by the CPUC on PG&E's application.

2.10 APPLICANT-PROPOSED MEASURES

PG&E's Applicant Proposed Measures (APMs) are listed below and have been incorporated into the proposed project's design and construction plans to minimize the proposed project's potential impacts. These measures would be implemented regardless of any regulatory oversight by the CPUC. The assessment of the levels of significance associated with each potential project-specific impact is discussed in the context of these APMs being included as part of the project. Where potentially significant impacts were identified, additional mitigation measures were added throughout this IS/MND, superseding or supplementing existing APMs to further reduce impacts to a less-than-significant level. APMs presented below are referenced from the PEA (Transcon 2010 and Transcon 2011).

Aesthetics

APM Visual-1: Construct a prefabricated concrete wall on the north and east sides of the substation and replanting as necessary to leave three rows of trees on the east and north sides of the substation to minimize contrast with the existing visual character of the area. As almond trees die, or are impacted by road widening along Sunnyside and Perrin Avenues, the trees will be replaced with compatible vegetation.

APM Visual-2: Security lighting will consist of sodium vapor lamps and all exterior lighting will use non-glare light bulbs, designed and positioned to minimize casting light and/or glare to off-site locations. Security lighting will be designed at the substation in a way such that all lighting is directed inwards. In addition, all exterior lighting will be hooded to reduce light pollution.

Air Quality

APM Air-1: All disturbed areas that are not being actively used for construction purposes will be stabilized of dust emissions using water or covered with a tarp or other suitable covering.

APM Air-2: All unpaved roads utilized for accessing the project will be stabilized by spraying with water.

APM Air-3: All ground-disturbing activities will be effectively controlled of fugitive dust emissions by application of water or by presoaking.

APM Air-4: When materials are transported off site, all material will be covered or wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container shall be maintained.

APM Air-5: All operations will remove the accumulation of mud or dirt from adjacent public streets at the end of each workday.

APM Air-6: Trackout (i.e., dirt and mud transported on vehicle tires and transferred to the pavement upon existing the work area) will be removed at the end of each workday when it extends 50 or more feet from the site.

APM Air-7: Speeds of vehicles and equipment operating on unpaved surfaces will be limited to no more than 15 miles per hour, and as required in the project dust control permit.

APM Air-8: Dust suppressants or watering will be used to ensure that dust is controlled to less than 20 percent opacity when winds exceed 20 miles per hour.

Greenhouse Gases

APM GHG-1/Noise-5: When not performing construction, operation, or maintenance activities, vehicles will be shut off rather than left idling unnecessarily. Some equipment or vehicles may require extended start-up times. For such equipment, a common sense approach will be used to determine idling times. Normal idling will not exceed five minutes, as required by California law.

APM GHG-2: Diesel fueled off-road construction equipment with 50 horsepower or greater engines shall at a minimum meet U.S. Environmental Protection Agency (EPA) and California Air Resources Board (CARB) Tier 1 engine standards. Compliance records will be kept by the general construction contractor. This APM is not applicable to equipment permitted by the local air quality district or certified through CARB's Statewide Portable Equipment Registration Program, or single specialized equipment that will be used for less than five total days.

APM GHG-3: PG&E will incorporate the following measures into its construction plans to further reduce greenhouse gas emissions:

- Encourage construction workers to carpool by establishing carpooling to construction sites where feasible to do so.
- Encourage recycling of construction waste.
- Minimize welding and cutting by using compression of mechanical applications where practical and within standards.

APM GHG-4: PG&E will continue to be an active member of the SF_6 Emission Reduction Partnership, which focuses on reducing emissions of sulfur hexafluoride (SF_6) from transmission and distribution sources. PG&E will also continue to institute new rules for more accurately monitoring its equipment for SF_6 leaks and immediately repairing leaks that are discovered. PG&E will ensure that all breakers purchased for this project will have a manufacturer's guaranteed SF_6 leakage rate of 0.5 percent per year or less.

Biological Resources

APM Bio-2: To prevent the spread of noxious weeds, only equipment which has been washed and is free of caked on mud, dirt, and other debris which could house plant seeds will be allowed in the project area.

APM Bio-6: In accordance with, and in addition to the training requirements in AMM 1 of the PG&E San Joaquin Valley Habitat Conservation Plan (HCP), worker environmental awareness training will be conducted prior to initiating project construction activities and throughout the duration of construction, such that all new site workers have received training. Worker training will detail sensitive species of the project area and those conservation measures which have been identified to minimize impacts to them. In addition, workers will be informed about the presence, life history, and habitat of these species. Training will also include information on federal and state laws protecting migratory birds. Documentation of worker training will be available on-site.

APM Bio-7: In accordance with the monitoring requirements in AMMs 15 and 17 of the HCP, a biological monitor will be onsite during ground disturbing activities with the potential to disturb habitat near flagged exclusion and restricted activity zones in order to minimize impacts to salamanders. Before the start of work each morning, the biological monitor will check under all equipment and stored supplies left in the work area overnight within 600 feet of suitable habitat for listed species with a potential to occur in the area. The monitor will have the authority to stop work or determine alternative work practices in consultation with agencies and construction personnel, as appropriate, if construction activities are likely to impact sensitive biological resources. The biological monitor will document monitoring activities in a daily log summarizing construction activities and environmental compliance.

APM Bio-8: All work will be done in a manner that minimizes disturbance to wildlife and habitat.

APM Bio-9: All food waste and associated containers will be disposed of in closed lid containers.

APM Bio-11: Proper spill prevention and cleanup equipment shall be readily available.

APM Bio-12: Where work on pavement, existing roads, and existing disturbed areas is not practicable, worker vehicles and construction equipment shall remain on identified access routes and designated areas for construction. If additional areas are required, a biologist will survey the new area, identify any sensitive biological resource, and flag that resource for avoidance.

APM Bio-13: No pets or firearms are permitted within the project area.

APM Bio-14: Sensitive areas will be clearly flagged or marked. Sensitive areas will be avoided during construction unless the necessary agency permits and/or approvals have been obtained.

APM Bio-18: All pole holes will be backfilled or covered at the end of the work day by a method that would restrict any wildlife from entering the hole from the surface, and to prevent human injury.

APM Bio-19: PG&E will consider the location of seasonal wetlands in the design of the power line. No power line poles will be placed in seasonal wetlands. Prior to construction the perimeter of the seasonal wetland near project construction will be flagged for avoidance.

APM Bio-20: Suitable habitat areas (i.e., seasonal wetlands, ponds, and canals) within the project area will be identified during preconstruction surveys. These areas will be mapped and clearly marked in the field, and will be avoided during construction.

APM Bio-22: Additional conservation measures and/or mitigation recommended by the USFWS and CDFG through consultation for the California tiger salamander will be incorporated into the project. Any APMs that conflict with permits issued by the USFWS and/or CDFG will be superseded by those resource agency permit requirements.

APM Bio-24: Avian Power Line Interaction Committee Guidelines in accordance with the Suggested Practices for Raptor Protection on Power Lines: The State of the Art in 2006[1] will be incorporated into the power line design to minimize the likelihood of avian electrocutions.

APM Bio-25: To the extent that the terms of these APMs conflict with subsequently negotiated terms and conditions of any state and/or federal environmental permit, the subsequent permit conditions will supersede the terms of these APMs.

Cultural Resources

APM Cult-2: If the applicant revises the location of proposed facilities and ground-disturbing activities that affect areas beyond those surveyed for the PEA, those areas will be subjected to a cultural resources inventory to ensure that any newly identified sites are avoided by ground-disturbing activities.

APM Cult-3: The applicant will minimize or avoid impacts to any potentially significant prehistoric and historic resources that might be discovered during construction by implementing standard protocols that include ceasing all work within 50 feet of the discovery, protecting the discovery from further impacts, and immediately contacting a PG&E Cultural Resources Specialist.

APM Cult-4: If human remains are discovered, work in the immediate vicinity will stop immediately and a PG&E Cultural Resources Specialist will be contacted. The location of the discovery will be secured to prevent further impacts and the location will be kept

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

confidential. The Cultural Resources Specialist will evaluate the discovery and will contact the Fresno County Coroner upon verifying that the remains are human. If the coroner determines the remains are Native American, the Native American Heritage Commission (NAHC) shall be contacted and the remains will be left in situ and protected until a decision is made on their final disposition.

Geology and Soils

APM Geo-1/WQ-1: Erosion and Sediment Control Plan (ESCP) implementation. An ESCP will be prepared in association with the Stormwater Pollution Prevention Plan (SWPPP). This plan will be prepared in accordance with the Water Board guidelines and other applicable Best Management Practices (BMPs). Implementation of the plan will help stabilize disturbed areas and waterways and will reduce erosion and sedimentation. The plan will designate BMPs that will be followed during construction activities. Erosion-minimizing efforts may include, but are not limited to, measures such as:

1. Avoiding excessive disturbance of steep slopes.
2. Using drainage control structures (e.g., straw wattles or silt fencing) to direct surface runoff away from disturbed areas.
3. Strictly controlling vehicular traffic.
4. Implementing a dust-control program during construction.
5. Restricting access to sensitive areas.
6. Using vehicle mats in wet areas.
7. Revegetating disturbed areas, where applicable, following construction. In areas where soils are to be temporarily stockpiled, soils will be placed in a controlled area and will be managed with similar erosion control techniques. Where construction activities occur near a surface water body or drainage channel and drainage from these areas flows towards a water body or wetland, stockpiles will be placed at least 100 feet from the water body or will be properly contained (such as berming or covering to minimize risk of sediment transport to the drainage). Mulching or other suitable stabilization measures will be used to protect exposed areas during and after construction activities. Erosion-control measures will be installed, as necessary, before any clearing during the wet season and before the onset of winter rains. Temporary measures, such as silt fences or wattles intended to minimize erosion from temporarily disturbed areas, will remain in place until disturbed areas have stabilized.
8. The SWPPP will be designed specifically for the hydrologic setting of the project. BMPs documented in the ESCP may also be included in the SWPPP.

Hazards and Hazardous Materials

APM Haz-1: Emergency spill response and cleanup kits will be available on site and readily available for the cleanup of any accidental spill. Construction crews will be trained in safe handling and cleanup responsibilities prior to the initiation of construction.

APM Haz-2: In the event of an accidental spill, the substation is equipped with a retention basin that meets SPCC Guidelines (40 CFR 112). The SPCC basin will be sufficiently sized to accommodate the accidental spill of all mineral oil from the largest transformer located at the substation. The substation will also be equipped with lead-acid batteries to provide backup power for monitoring, alarm, protective relaying, instrumentation and control, and emergency lighting during power outages. Containment will be constructed around and under the battery racks with neutralizing pads.

APM Haz-3: A water truck will be available on site during dry conditions, as assessed by the construction foreman, to prevent the ignition or spread of a wildfire. The work site will be sprayed a minimum of three times per day during dry conditions.

Hydrology and Water Quality

APM WQ-2: PG&E will avoid working within seasonal wetlands, ponds, or other water bodies. No poles will be placed within seasonal wetlands. The limits of seasonal wetlands adjacent to the work areas will be flagged in the field for avoidance. Underground canal and creek crossings will be drilled or bored underneath the water body.

APM WQ-3: PG&E will engineer a permanent infiltration basin within the substation perimeter to capture on-site stormwater, clean it of potential pollutants, and infiltrate it into the local groundwater table. Sizing and design of the facility will follow industry best practices, including Fresno County and California Stormwater General Permit guidelines.

Noise

APM Noise-1: Construction will not occur before 6:00 a.m. or after 9:00 p.m. on any day except Saturday or Sunday, when construction will not occur before 7:00 a.m. or after 5:00 p.m. Work will only be conducted outside of these hours as required for project safety or to take advantage of the limited times when the power line can be taken out of service.

APM Noise-3: Where feasible, construction traffic will be routed to avoid sensitive noise receptors such as residences, schools, religious facilities, hospitals, and parks.

APM Noise-4: Stationary equipment used during construction will be located as far as practical from sensitive noise receptors.

APM Noise-6: Where feasible, equipment will be used that is specifically designed for low noise emissions and equipment powered by electric or natural gas as opposed to diesel or gasoline.

APM Noise-7: Residents in areas of heavy construction noise will be notified prior to commencing construction activities. Notification should include written notice and the posting of signs in appropriate locations with a contact number that residents can call with questions and concerns.

Transportation and Traffic

APM Tran-1: Deliveries will be made during normal construction hours.

APM Tran-2: PG&E shall prepare and implement a Traffic Management Plan or plans as required by, and in accordance with County requirements. The plan or plans shall be submitted to the CPUC when submitted to the County, and shall be distributed to all construction supervisors prior to commencement of construction activities.

2.11 AVOIDANCE AND MINIMIZATION MEASURES

2.11.1 BIOLOGICAL RESOURCES

Avoidance and Minimization Measures (AMMs) from PG&E's San Joaquin Valley HCP applicable to the proposed project are listed below. These AMMs would be applied during both construction and O&M of the proposed project.

AMM 1: Employees and contractors performing operation and maintenance (O&M) activities will receive ongoing environmental education. Training will include review of environmental laws and guidelines that must be followed by all personnel to reduce or avoid effects on covered species during O&M activities.

AMM 2: Vehicles and equipment will be parked on pavement, existing roads, and previously disturbed areas to the extent practicable.

AMM 3: The development of new access and ROW roads by PG&E will be minimized, and clearing vegetation and blading for temporary vehicle access will be avoided to the extent practicable.

AMM 4: Vehicles will not exceed a speed limit of 15 miles per hour (mph) in the ROWs or on unpaved roads within sensitive land cover types.

AMM 5: Trash dumping, firearms, open fires (such as barbecues) not required by the O&M activity, hunting, and pets (except for safety in remote locations) will be prohibited in O&M work activity sites.

AMM 6: No vehicles will be refueled within 100 feet of a wetland, stream, or other waterway unless a bermed and lined refueling area is constructed.

AMM 7: During any reconstruction of existing overhead electric facilities in areas with a high risk of wildlife electrocution (e.g., nut/fruit orchards, riparian corridors, areas along canal or creek banks, PG&E's raptor concentration zone [RCZ]), PG&E will use insulated jumper wires and bird/animal guards for equipment insulator bushings or will construct lines to conform to the latest revision of PG&E's Bird and Wildlife Protection Standards.

AMM 9: Erosion control measures will be implemented where necessary to reduce erosion and sedimentation in wetlands, waters of the United States, and waters of the state, and habitat occupied by covered animal and plant species when O&M activities are the source of potential erosion problems.

AMM 10: If an activity disturbs more than 0.25 acre in a grassland, and the landowner approves or it is within PG&E's rights and standard practices, the area should be returned to

pre-existing conditions and broadcast-seeded using a commercial seed mix. Seed mixtures/straw used for erosion control on projects of all sizes within grasslands will be certified weed-free. PG&E shall not broadcast (or apply in other manner) any commercial seed or seed mix to disturbance sites within other natural land cover types, within any vernal pool community, or within occupied habitat for any covered plant species.

AMM 12: If a covered plant species is present, a qualified biologist will stake and flag exclusion zones of 100 feet around plant occupied habitat (both the standing individuals and the seed bank individuals) of the covered species prior to O&M activities[2]. (Note: AMM 11 addresses elderberry plants and valley elderberry longhorn beetle.)

AMM 13: If a covered annual plant species is present, O&M activities will occur after plant senescence and prior to the first significant rain to the extent practicable.

AMM 14: If a covered plant species is present, the upper 4 inches of topsoil will be stockpiled separately during excavations. When this topsoil is replaced, compaction will be minimized to the extent consistent with utility standards. (This measure will be used as an AMM for narrow endemic plants only after approval by USFWS and DFG during the Confer Process.)

AMM 15: If vernal pools are present, a qualified biologist will stake and flag an exclusion zone prior to O&M activities. The exclusion zone will encompass 250 feet[2]. Work will be avoided after the first significant rain until June 1, or until pools remain dry for 72 hours.

AMM 17: If suitable habitat for covered amphibians and reptiles is present and protocol-level surveys have not been conducted, a qualified biologist will conduct preconstruction surveys prior to O&M activities involving excavation. If necessary, barrier fencing will be constructed around the work site to prevent reentry by the covered amphibians and reptiles. A qualified biologist will stake and flag an exclusion zone of 50 feet around the potentially occupied habitat[2]. No monofilament plastic will be used for erosion control in the vicinity of listed amphibians and reptiles. Barrier fencing will be removed upon completion of work. Crews will also inspect trenches left open for more than 24 hours for trapped amphibians and reptiles. A qualified biologist will be contacted before trapped amphibians or reptiles

[2] If an exclusion zone cannot extend the specified distance from the habitat, the biologist will stake and flag a restricted activity zone of the maximum practicable distance from the exclusion zone around the habitat. This exclusion zone distance is a guideline that may be modified by a qualified biologist, based on site-specific conditions (including habituation by the species to background disturbance levels). Measures are practicable where physically possible and not conflicting with other regulatory obligations or safety considerations; O&M activities will be prohibited or greatly restricted within restricted activity zones. However, vehicle operation on existing roads and foot travel will be permitted. A qualified biologist will monitor O&M activities near flagged exclusion and restricted activity zones. Within 60 days after O&M activities have been completed at a given worksite, all staking and flagging will be removed.

(excluding blunt-nosed leopard lizard and limestone salamander) are moved to nearby suitable habitat.

AMM 18: If western burrowing owls are present at the site, a qualified biologist will work with O&M staff to determine whether an exclusion zone of 160 feet during the non-nesting season and 250 feet during the nesting season can be established. If it cannot, an experienced burrowing owl biologist will develop a site-specific plan (i.e., a plan that considers the type and extent of the proposed activity, the duration and timing of the activity, the sensitivity and habituation of the owls, and the dissimilarity of the proposed activity with background activities) to minimize the potential to affect the reproductive success of the owls.

AMM 21: If San Joaquin kit fox dens are present, their disturbance and destruction will be avoided where possible. However, if dens are located within the proposed work area and cannot be avoided during construction, qualified biologists will determine if the dens are occupied. If unoccupied, the qualified biologist will remove these dens by hand-excavating them in accordance with USFWS procedures (USFWS 1999). Exclusion zones will be implemented following USFWS procedures (USFWS 1999) or the latest USFWS procedures. The radius of these zones will follow current standards or will be as follows: Potential Den—50 feet; Known Den—100 feet; Natal or Pupping Den—to be determined on a case-by-case basis in coordination with USFWS and DFG. Pipes will be capped and exit ramps will also be installed in these areas to avoid direct mortality.

AMM 22: All vegetation management activities will implement the nest protection program to avoid and minimize effects on Swainson's hawk, white-tailed kite, golden eagle, bald eagle, and other nesting birds. Additionally, trained pre-inspectors will use current data from DFG and California Natural Diversity Database (CNDDB) and professional judgment to determine whether active Swainson's hawk, golden eagle, or bald eagle nests are located near proposed work. If pre-inspectors identify an active nest near a proposed work area, they will prescribe measures to avoid nest abandonment and other adverse effects to these species, including working the line another time of year, maintaining a 500-foot setback, or if the line is in need of emergency pruning, contacting the HCP Administrator.

AMM 29: No herbicide will be applied within 100 feet of exclusion zones, except when applied to cut stumps or frilled stems or injected into stems.

AMM 30: Trees being felled in the vicinity of an exclusion zone will be directionally felled away from the zone, where possible. If this is not feasible, the tree will be removed in sections.

2.12 ELECTRIC AND MAGNETIC FIELDS

Recognizing that there is public interest and concern regarding potential health effects from exposure to Electric and Magnetic Fields (EMF) from power lines, Appendix F of PG&E's Proponent's Environmental Assessment provides some general background information regarding EMF associated with electric utility facilities. However, EMF is not addressed here as an environmental impact under CEQA. The 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, the CPUC, following a decision from 1993 (D.93-11-013) that was reaffirmed on January 27, 2006 (D.06-01-042), requires PG&E and other utilities to consider "no cost" and specified "low cost" measures to reduce public exposure to magnetic fields in accordance with PG&E's "EMF Design Guidelines for Electrical Facilities." PG&E will comply with these Guidelines.

2.13 ALTERNATIVES

CEQA does not require a review of alternatives when, as with PG&E's project, the proposed project would result in no significant environmental impacts after mitigation (Guidelines, Sec. 15126.6, subd. (a) and (f)(2)(A)). This is because, under CEQA, a "reasonable alternative" is one that could feasibly accomplish most of the basic objectives of the project and could avoid or substantially lessen one or more of the significant effects of the project (CEQA Guidelines, California Code of Regulations, Title 14, Chapter 3, Section 151626.6 as amended July 24, 2007).

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