

# Initial Study

## Environmental Checklist Form

### B.1 Project Description

#### B.1.1 Project Title

Pacific Gas & Electric Company's Seventh Standard Substation Project

#### B.1.2 Project Sponsor's Name and Address

Pacific Gas & Electric Company (PG&E)  
245 Market Street  
Mail Code N10A  
San Francisco, California 94105

#### B.1.3 Lead Agency Name and Address

California Public Utilities Commission  
Energy Division  
505 Van Ness Avenue, Fourth Floor  
San Francisco, California 94102

#### B.1.4 Lead Agency Contact Person and Phone Number

Monisha Gangopadhyay, Project Manager  
Energy Division  
California Public Utilities Commission  
505 Van Ness Avenue, Fourth Floor  
San Francisco, California 94102  
(415) 703-5595

#### B.1.5 Project Location

Pacific Gas & Electric Company (PG&E) proposes to construct a new 115/21 kilovolt (kV) low-profile substation (Proposed Project), including 115 kV bus structures, six 115 kV circuit breakers, three 115/21 kV power transformers, three 45 megavolt-ampere (MVA) transformers, and up to nine distribution circuits. The Proposed Project would include approximately 1,000 feet of 115 kV power line. PG&E has stated that the project is necessary to sustain the current electric service demands of the Urban Bakersfield Northwest Distribution Planning Area (DPA). The substation would be constructed to meet the electrical demand in 2010 and accommodate future capacity increases beyond 2010, as required.

The Project Area has been defined as the region south of Seventh Standard Road and west of the Calloway Canal in the northwest quarter of Section 1, Township 29 South, Range 26 East in the City of Bakersfield, and Kern County, California. The proposed Seventh Standard Substation site would be located approximately 2.5 miles west of State Route (SR) 99 within the City of Bakersfield (see Figures

B-1 and B-2). The proposed Seventh Standard Substation site, including buffer area, is approximately 530 feet by 320 feet, comprising approximately 4.9 acres. The substation site is currently used as an almond orchard.

### **B.1.6 Surrounding Land Uses and Setting**

The entire project area is within Kern County, California. Jurisdiction over the project area is divided between three governmental entities including Kern County, City of Bakersfield, and City of Shafter. The proposed project is located entirely on private lands under the jurisdiction of the City of Bakersfield or within its sphere of influence. The substation site is located south of Seventh Standard Road, and 2.5 miles west of SR-99. Almond trees are currently growing on the proposed substation site, and the current land use is agriculture.

The City of Bakersfield is located at the southern end of the Central Valley. This area, with a warm and dry climate, is optimal for agricultural use. The City of Bakersfield has been shaped by both rural and urban development. Since the late 1800s, agriculture has been the predominant land use around the City of Bakersfield; however, the region is also the fourth largest producer of oil in the United States. The City of Bakersfield (metropolitan population 406,000) has been characterized by gradual and steady growth and the community is projected to double in population in twenty years (Bakersfield, 2009a).

The Urban Bakersfield Northwest Distribution Planning Area is experiencing and will continue to experience increasing load growth due to major residential and commercial developments that are in various planning, approval, or construction stages. The City of Bakersfield has prepared and approved a Mitigated Negative Declaration (MND) for Zone Change from Agricultural Zone (A) to Limited Multi-Family Dwelling zone (R-2) on 39+ acres and Drilling Island on 3+ acres that is proposed as a subdivision/commercial development for the land adjacent to and surrounding the proposed substation site.

The majority of existing land use in the project area can be characterized as agricultural, including the cultivation of almond orchards and field crops. An existing oil well is located approximately 100 feet north of the proposed substation property line. Also, located to the south and west of the proposed project is a large expanse of active oil fields. The oil fields include wells, storage tanks, and pipelines. A set of five oil storage tanks is located 300 feet south of the proposed substation site. A communications tower is located approximately 0.75 miles to the southwest of the project site within existing oil fields.

Medium density residential areas have only been constructed recently in the project area. The North Pointe subdivision is a medium density residential neighborhood located approximately one half mile south of Seventh Standard Road and to the west of Calloway Drive, more than 4,000 feet, at its closest point, from the proposed substation site. Additional subdivisions are located south of the project area along Snow Road. Subdivisions have been proposed approximately 1.3 miles west of the substation site (Rosedale Ranch), approximately 0.7 miles north of the site (Heritage Ranch), and approximately 1.7 miles west of the substation site (Saco Ranch).

The nearest existing residential properties are located approximately 0.4 miles southeast of the proposed substation site just west of the Friant-Kern canal along Isaak Lane. There are residential properties located 0.9 miles west of the substation along Seventh Standard Road and a property located east of the Friant-Kern canal along Seventh Standard Road as well. Three master planned communities, Coberly West, Heritage Ranch, and Mission Lakes, are planned within the project area. Mission Lakes and Heritage

Figure B-1. Regional Map  
[CLICK HERE TO VIEW](#)

Figure B-2. Project Area  
[CLICK HERE TO VIEW](#)

Ranch would be located directly north of the substation site, across Seventh Standard Road. The community plans have been approved by the City of Shafter; however, precise orientation of future homes around the substation site is not known, and no firm schedule is in place for construction of the development (Forest, 2009).

Coberly West is proposed as a planned community to the north of the project area within the City of Shafter. The proposed development is located on approximately 950 acres. The community has been designed as a mixed-use development incorporating residential, commercial, public, and recreation uses. The development is expected to ultimately contain approximately 3,500 dwelling units.

Heritage Ranch is proposed as a master planned community to the north of the project area within the City of Shafter. The proposed development is located on approximately 260 acres. The community has been designed as a mixed-use development incorporating residential, commercial, public, and recreation uses. The development is expected to ultimately contain approximately 800 dwelling units.

Mission Lakes is also proposed as a planned community to the north of the project area within the City of Shafter. The proposed development is located on approximately 1,350 acres. The community has been designed as a mixed-use development incorporating residential, commercial, public, and recreation uses. The development is expected to ultimately contain over 5,000 dwelling units.

## B.1.7 General Plan Designation

Local land use plans and zoning are considered in order to assist the CPUC in determining the Proposed Project's consistency with local policies. However, local discretionary permits (e.g., conditional use permits) and an evaluation of local plan consistency are not required for the Proposed Project because the CPUC has preemptive jurisdiction over the construction, maintenance, and operation of public utilities.

The long-term development strategy for the City of Bakersfield incorporate the Kern County General Plan (Kern County, 2004) and the Metropolitan Bakersfield General Plan and General Plan Update (City of Bakersfield, 2009a). The Kern County General Plan provides long-range guidance regarding growth and resources within Kern County, and Specific Plans that provide detailed policies and site development standards for planning areas. The Metropolitan Bakersfield General Plan is a long-range guide for attaining the City's goals within its ultimate service area and accommodating its population to the year 2020. The General Plan also encompasses specific plans to regulate development in specific geographic areas of the community.

## B.1.8 Zoning

The City of Bakersfield zoning ordinance designates the project site as R-2 Limited Multi-Family Dwelling Zone (City of Bakersfield, 2008). The zoning designation to the immediate west and south of the site is Agriculture. The immediate north and east of the site is designated low density residential.

## B.1.9 Project Overview

PG&E proposes to construct the Seventh Standard Substation to maintain reliability and meet projected electrical load requirements in the unincorporated areas of Bakersfield, the proposed Rosedale Ranch, the planned development areas outlined in the City of Shafter General Plan, the area agricultural pumps and oil production facilities, and other future development. PG&E states that the Proposed Project is required to be operational by 2010 to ensure that safe and reliable electric service is available to meet

customer electrical demands without overloading the existing electric facilities in the Urban Bakersfield Northwest Distribution Planning Area (DPA). Pending approval, construction would begin in late 2009 or early 2010. The Proposed Project would include the following components, which are depicted in Figures B-3 and B-4:

- Construction of a new three-bank 115/21 kV low-profile substation. The substation would be constructed on an approximately 4.9-acre site in the City of Bakersfield, California. The substation site would be looped into the Rio Bravo-Kern Oil 115 kV Power Line paralleling the south side of Seventh Standard Road. It would contain three 45-megavolt-ampere (MVA) transformers with two to three distribution circuits per transformer and up to nine distribution circuits in underground conduit and transitioning to the overhead position or remaining underground.
- Installation of approximately 1,000 feet of overhead double-circuit 115 kV subtransmission line starting at the Rio Bravo-Kern Oil 115 kV power line located along Seventh Standard Road and ending at the substation. The subtransmission line would be located on one tubular steel pole, approximately 90 feet tall, and two tubular steel pole dead end structures, approximately 75 feet tall, within the substation access road area.
- Construction of a 700-foot paved access road from Seventh Standard Road to the substation site.

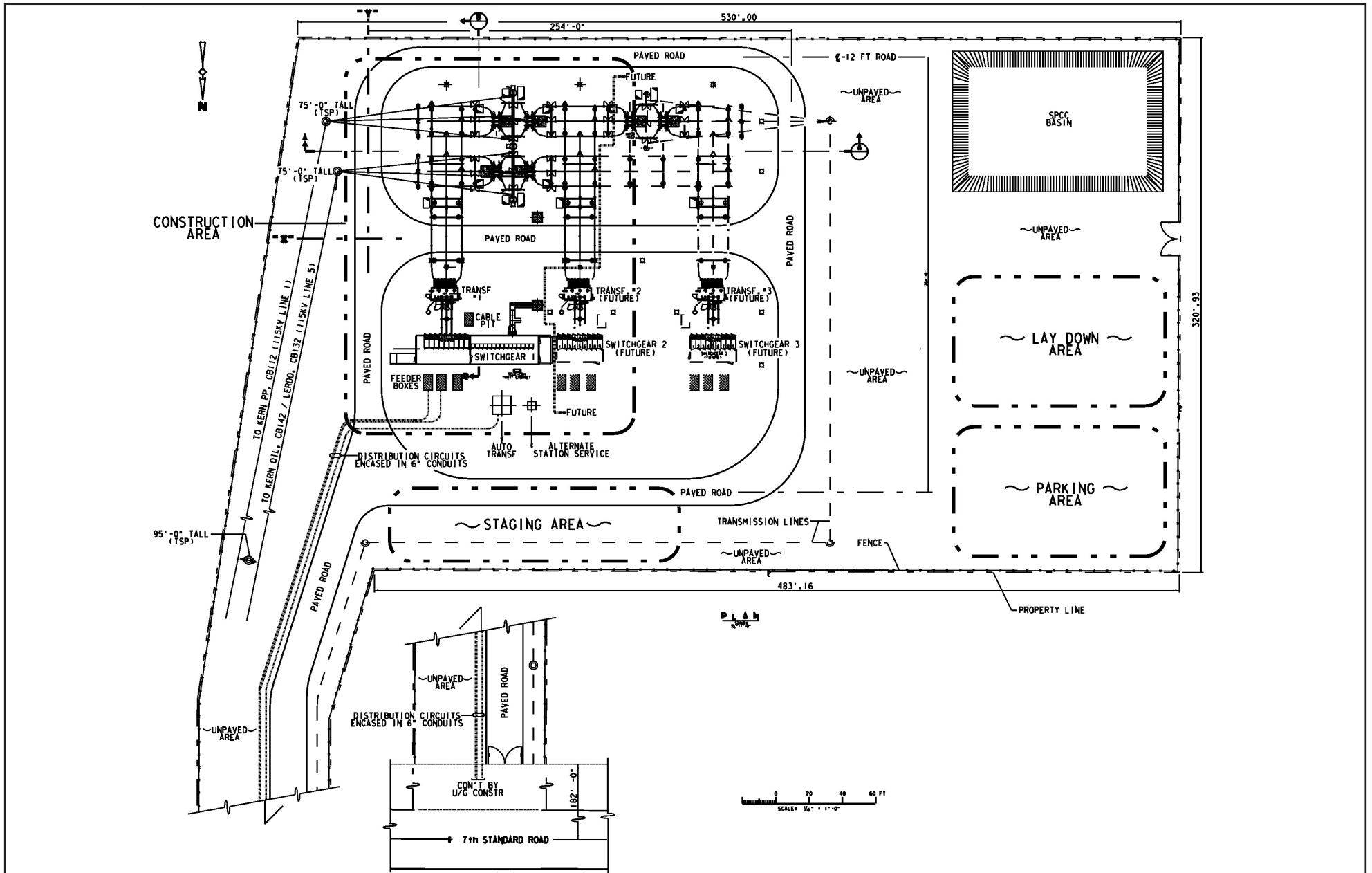
#### **B.1.9.1 Project Objectives**

PG&E has defined the objective for the Proposed Project (PG&E, 2009) as follows: “continue to provide safe, reliable electrical service to the unincorporated areas of Bakersfield, the proposed Rosedale Ranch, the planned development areas outlined in the City of Shafter General Plan, the area agricultural pumps and oil production facilities, and other future development.”

#### **B.1.9.2 Purpose and Need**

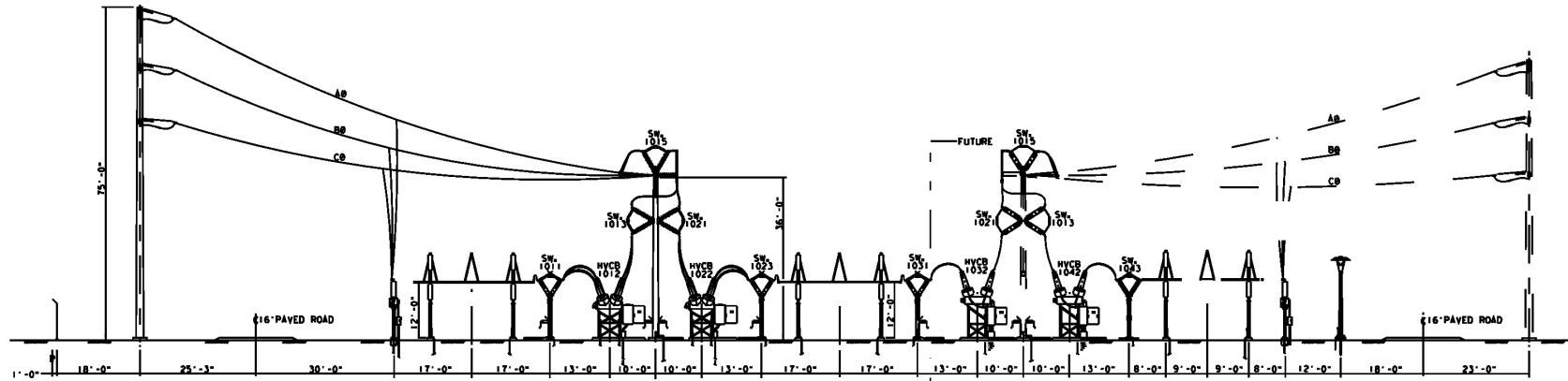
PG&E has stated that the purpose of the Proposed Project would be to build necessary electrical facilities in order to maintain safe and reliable service to customers and to meet forecasted demand in the Urban Bakersfield Northwest DPA beginning in 2010. Under the Federal Energy Regulatory Commission (FERC), North American Electric Reliability Council (NERC), Western Electricity Coordinating Council (WECC), and CPUC rules, guidelines, and regulations, electrical transmission systems must have sufficient capacity to maintain safe, reliable, and adequate service to customers. The safety and reliability of the system must be maintained under normal conditions (base case), when all facilities are in service, and also under abnormal conditions (both likely and unlikely contingencies) resulting from equipment or line failures, maintenance outages or outages that cannot be predicted or controlled due to weather, earthquakes, traffic accidents, and other unforeseeable events.

The Urban Bakersfield Northwest DPA is currently served by 12 kV and 21 kV electric distribution lines, with the majority of the existing load and future growth at 21 kV. The Urban Bakersfield Northwest DPA has no 21 kV ties to the west, north, or east. To the south there are 21 kV ties to the Urban Bakersfield Southwest DPA. Customers in the area are primarily residential with associated commercial. There are large parcels of land suitable for development remaining in the area and growth has been rapid in recent years, between 2000 and 2009, the population in Bakersfield increased approximately 35 percent (Bakersfield, 2009a). The City of Shafter has updated its General Plan to include the area north of Seventh Standard Road and west of State Route (SR) 99 for light industrial and mixed use development. The City of Bakersfield is working with developers on large scale developments south and west of Seventh Standard Road. PG&E expects growth to continue into the foreseeable future.

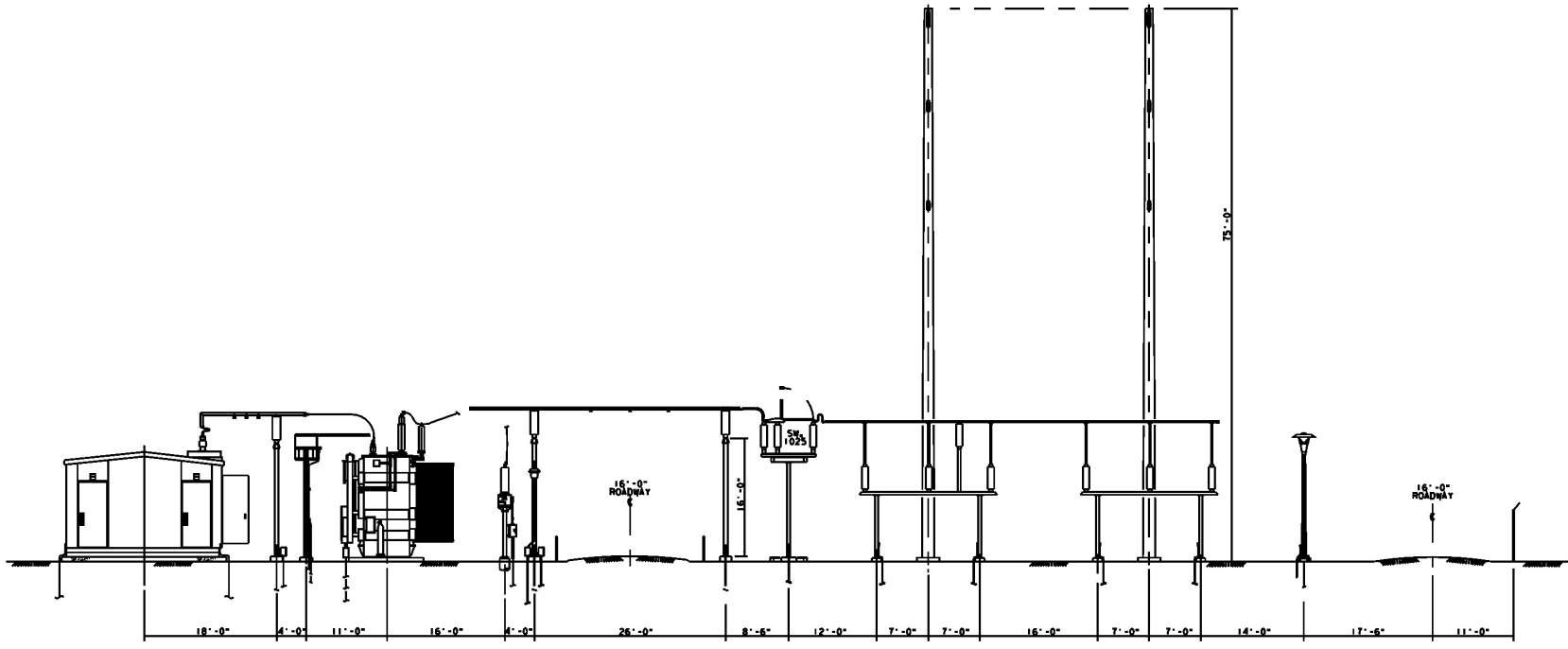


Source: PG&E, 2009a.

**Figure B-3**  
**Proposed Substation General Arrangement**



SECTION A  
NOT TO SCALE  
ELECTRIC PLAN



SECTION B  
NOT TO SCALE  
ELECTRIC PLAN



Source: PG&E, 2009a.

Figure B-4  
Profile View of 115 kV Switch  
and Bus Structure



PG&E has four electric distribution substations presently serving this planning area, including Renfro, Kern Power, Fruitvale, and Rosedale (PG&E, 2009). The Kern Power, Fruitvale, and Rosedale Substations are within one-half mile of each other and the Renfro Substation is four miles to the west. The closest substation to the north is the Lerdo Substation, which is 10 miles away and outside of the DPA's service area. The four substations within the DPA have a combined distribution capacity of approximately 250 megawatts (MW). Based on the current demand projection, peak electric demand, currently at 215.3 MW, is expected to reach 283.6 MW in 2010 and exceed the area's capacity by 31.6 MW (12.5 percent). This load increase includes agricultural pumps and oil production increases in adjacent DPAs, which are not expected to be reduced due to the current economic pressures that are stalling other types of development. With the addition of a new transformer bank at Seventh Standard Substation, distribution capacity for DPA substations will increase to approximately 285 MW by summer 2010 (PG&E, 2009). With all three transformers in place at the new substation, the combined capacity of the DPA's substations will increase to approximately 369 MW, sufficient to reliably serve the growing peak demand of customers in the City of Bakersfield, City of Shafter, and the surrounding area in Kern County for at least 12 years.

The Seventh Standard Substation is needed to sustain the current electric service demands of the Urban Bakersfield Northwest DPA. The Rosedale Ranch development, whose developers are currently building infrastructure for the development, as well as continued development in the surrounding area, will increase electrical demand for the area (Ortiz, 2009). Over recent years, the northwest Bakersfield area has experienced consistent, increased electrical load growth. Nearly all electrical capacity has been used within the Urban Bakersfield Northwest DPA. The proposed Rosedale Ranch and other future development will exceed the capacity of the current electrical system within the DPA. Load transfers are not feasible as existing infrastructure (circuits and substations) are too far from the area, preventing reliable service. In 2007, after the evaluation of various distribution capacity upgrade alternatives, PG&E determined that a substation in the northern growing area of the DPA would best provide the additional distribution capacity needed to serve the DPA reliably into the future. In order to preserve an appropriate substation site in this rapidly-developing area, PG&E studied the land available, identified an ideally-located site, and began the purchase process on a 4.9-acre parcel for a future substation off of Seventh Standard Road in Kern County.

## B.1.10 Project Components

### B.1.10.1 Seventh Standard Substation

The Project Area has been defined as the region approximately bounded by 7th Standard Road, the Calloway Canal, and almond orchards to the west and south. The proposed substation site is located north of Snow Road and approximately 1.3 miles east of Zerker Road. The Proposed Project would include the construction of a new 115/21 kV substation with three 45 MVA transformers and up to nine 21 kV distribution circuits. The substation would be constructed to accommodate future capacity increases beyond 2010 as required.

The substation would consist of electrical equipment needed to operate the substation, subtransmission lines into and out of the substation, an eight-foot-high, chain-link security fence surrounding the substation equipment with two 10-foot swing gates to provide access in and out of the substation, an access road to the substation from Seventh Standard Road, and landscaping outside of the chain-link perimeter fence. The substation footprint (area contained within the perimeter fence) is approximately 4.9 acres. The substation would incorporate low-profile design features, which limit the height of the electrical equipment to approximately 15 feet. In contrast, standard substation design generally includes substation electrical equipment up to 30 feet in height.

The substation would be an unstaffed, automated 45 MVA, 115/21 kV low-profile substation. The substation would serve one 115 kV subtransmission source line with three 45 MVA 115/21 kV transformers and up to nine 21 kV distribution lines at ultimate buildout (see Figure B-3, Proposed Substation Site Diagram). Electrical equipment housed within the substation would consist of the following:

- **Transformers.** Transformation would consist of three 45 MVA 115/21 kV transformers with isolating switch disconnects on high and low sides, surge arresters and neutral current transformers. The transformer area would be a maximum of 15 feet tall and would be neutral in color.
- **Six 115 kV circuit breakers.** The circuit breakers would be designed for switching and protecting three transmission lines and three 115/21 kV power transformers.
- **Three 21 kV metal-clad switchgears.**

Reinforced concrete subsurface footings and concrete slabs would be installed along with the grounding grid. Aboveground steel structures, circuit breakers, transformers, switchgears, buses and other electrical equipment would be installed after the concrete cures. Equipment would be bolted or welded to slabs and footings to meet or exceed seismic requirements. All equipment would be grounded to a substation ground grid.

#### B.1.10.2 Access Road

The substation would be accessed by a 16-foot-wide asphalt concrete paved driveway, approximately 700 feet in length, connecting to Seventh Standard Road. The substation entrance would have a locked gate for two-way traffic access to the substation. Site access is depicted on Figure B-3 above. All existing vegetation would be cleared to accommodate the road.

#### B.1.10.3 115 kV Subtransmission Lines

The substation would be looped into the Rio Bravo-Kern Oil 115 kV power line paralleling the south side of Seventh Standard Road. The double-circuit 115 kV interconnection line would span approximately 1,000 feet to the south from Seventh Standard Road along the east side of the access road, and enter the substation from the east. One TSP would be erected midway between Seventh Standard Road and the substation and two dead-end structures would be located just east of the substation from which the power line will drop down to the substation. The TSPs would be approximately 90 feet tall. The two drop down structures at the substation would be approximately 75 feet tall. The proposed conductor would be a “Marigold” 1113 kcmil All-Aluminum (AA) strand conductor, 1.216 inches in diameter. No shield wire would be used. Figures B-5 and B-6a and B-6b show profile drawings of a single TSP and the two TSP dead-end structures. Figure B-7 displays a photograph of a TSP and a dead-end structure that are from a different location but are similar to those that would be erected at the Seventh Standard Substation.

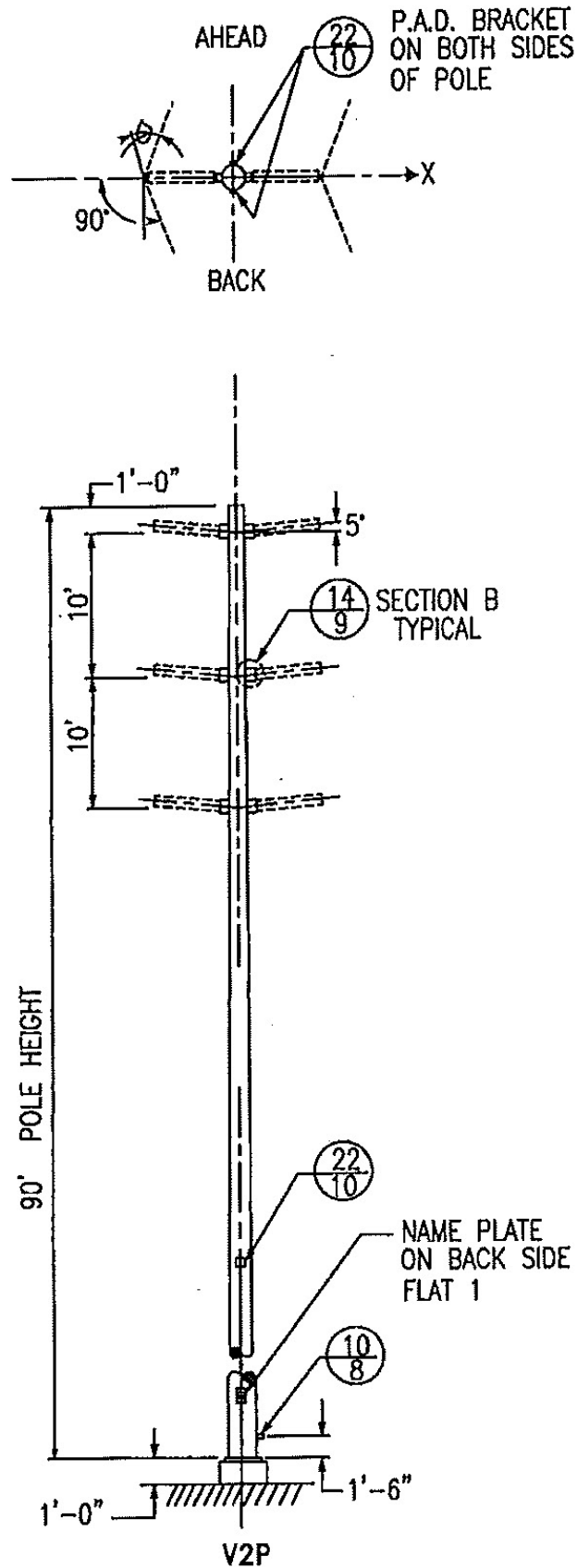


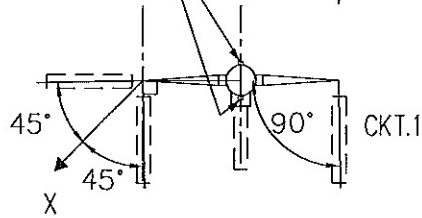
Figure B-5  
Singular Tubular Steel Pole

P.A.D BRACKETS  
ON BOTH SIDES  
OF POLE FROM  
TOP TO BOTTOM

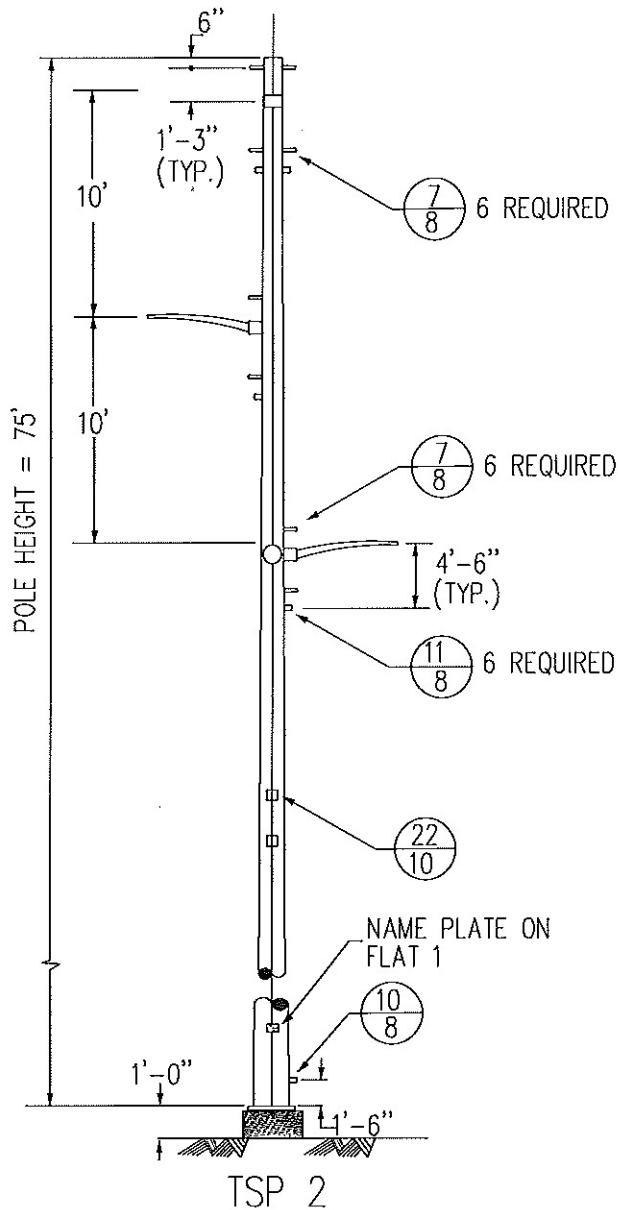
22  
10

AHEAD TO  
TSP 4

LINE ANGLE: 90°  
CONDUCTOR: 1113 AA



BACK FROM  
TSP 1

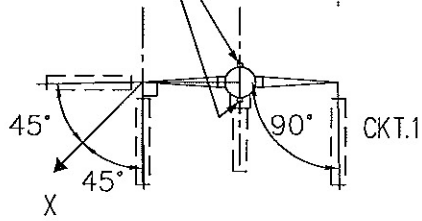


P.A.D BRACKETS  
ON BOTH SIDES  
OF POLE FROM  
TOP TO BOTTOM

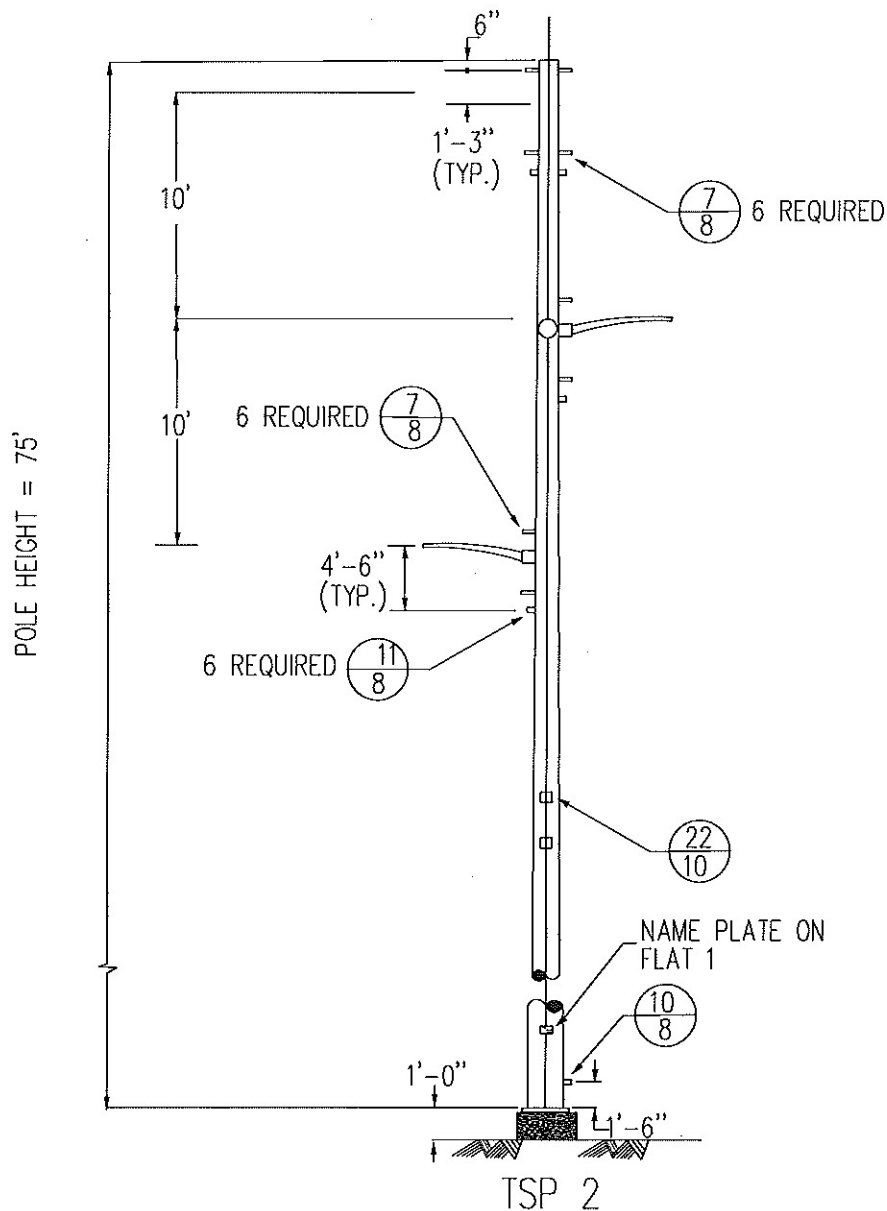
22  
10

AHEAD TO  
TSP 4

LINE ANGLE: 90°  
CONDUCTOR: 1113 AA



BACK FROM  
TSP 1





**Figure B-7. Typical TSP Structures.**

*Typical TSP dead-end structures are depicted on the left and a simulation of a TSP is depicted on the right (PG&E, 2009).*

#### B.1.10.4 21 kV Distribution Lines

Future load growth in the Urban Bakersfield Northwest DPA would initially be accommodated by three 45 MVA, 115/21 kV transformers and three 21 kV distribution lines. Three of the proposed distribution circuits would be built initially and would exit the substation underground to Seventh Standard Road. PG&E anticipates that a second transformer bank would be potentially necessary in 2014, with new distribution circuits being anticipated in 2016 and 2018. Full build-out of the substation would depend on development in the area; however, PG&E anticipates that the remaining transformer and distribution circuits would be installed in approximately 15 to 20 years.<sup>1</sup> Nine feeder lines are planned for the substation at ultimate build-out.

Electrical distribution lines would be constructed from the substation to areas of demand on an as-needed basis. Within the substation, the 21 kV distribution feeder lines would be placed underground in conduit, and may surface at Seventh Standard Road or remain underground. If the distribution line is above ground, the wood poles would be approximately 50 feet tall and would be spaced on average approximately 225 feet apart. The placement of each distribution line would be based upon the following:

- The location of the current load growth
- Existing electrical distribution facilities in the area
- The location of roads and existing PG&E rights-of-way (PG&E generally constructs distribution lines along existing roads).

**Distribution Line Relocation.** A Crimson Oil electrical distribution line currently runs through the proposed substation site. The distribution line is a private, third-party line serving an oil well (currently idle). PG&E would remove three poles and give them to the third-party owner for re-use. PG&E, at the

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<sup>1</sup> The distribution lines do not require formal approval from the CPUC under General Order 131-D. They are included in the project description of this CEQA document for informational purposes. These circuits are not considered part of the project and are not analyzed.

request of the third-party owner, would install new service to this well location. The new line would most likely be an underground line, but final design is not know at this time.

#### B.1.10.5 Perimeter Features

An eight-foot-high, chain-link, perimeter fence would be constructed around the substation for security purposes. The fence would follow the access road to within 180 feet of Seventh Standard Road. At this point, the fence would terminate and two 10-foot swing gates would be installed.

#### B.1.10.6 Drainage

Site drainage installations would be consistent with the National Pollutant Discharge Elimination System (NPDES) and the Storm Water Pollution Prevention Plan (SWPPP), as well as local ordinances and best engineering practices. In addition, the substation design would incorporate Spill Prevention Control and Countermeasure (SPCC) Plan design requirements, such as a concrete basin, raceways, and underground conduit.

During final engineering design, the site drainage would be developed to control surface runoff that would be in compliance with regulations regarding the alteration of existing drainage patterns. This may include, but is not limited to, concrete swales, ditches and culverts, and a retention basin.

If no local storm drain system is available at the time of construction, storm water runoff from the substation would be discharged into an onsite fenced retention basin on the west side of the property. Grading for a storm water basin would be approximately five feet deep. Once the local storm system is functional, the storm water runoff from the substation may or may not be tied into the future local system. Dependent upon future storm water system availability, the retention basin may be utilized as the permanent surface runoff control measure.

#### B.1.10.7 Landscaping

Final grading will ensure that contours match those of the surrounding area. The substation will be deliberately set back from Seventh Standard Road, and PG&E will consult local authorities for landscaping guidelines and preferences.

#### B.1.10.8 Lighting

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

#### B.1.10.9 Right-of-Way Acquisition

PG&E is in the process of acquiring the property rights for the 4.9-acre substation site, including the access road. Although escrow on the private property had not yet closed as of June 12, 2009, PG&E anticipates that escrow will close in June 2009, at which time PG&E would be the property owner (PG&E, 2009a).

## B.1.11 Project Construction Methods

### B.1.11.1 Substation Construction

The proposed substation site, including buffer area, is approximately 530 feet by 320 feet, plus the access road, comprising approximately 4.9 acres. The substation site is currently used as an almond orchard that was planted in 1999, and is relatively flat. The site is currently flood irrigated with a water line at the north end of the orchard.

Substation construction would begin by clearing almond trees and grading the site to establish proper drainage and a level surface. All grading would be conducted in compliance with the City of Bakersfield grading requirements. Removal of the almond orchard would require removal of organic material, such as trees, stumps, roots, brush, grass, weeds, and other deleterious material. The contractor would dispose of the removed almond trees in accordance with applicable rules and regulations. PG&E estimates that 6,000 cubic yards of fill would be required to replace the voids caused by removal of root systems. Cal Trans Class 2 aggregate base material would be used for the top four inches as the final surface. Engineered fill materials would be free of organic or other deleterious materials and would be less than 3 inches in maximum dimension. Excavated onsite soil, which is free of organics or other deleterious material and approved by the owner, may be used. Any imported fill materials that would be used as engineered fill would meet import fill specifications such that 100 percent of the material would be sized to pass through a 3-inch sieve.

After site preparation and grading for the substation, an eight-foot-high, chain-link, perimeter fence would be constructed around the substation for security purposes. The fence would follow the access road to within 180 feet of Seventh Standard Road. At this point, the fence would terminate and two 10-foot swing gates will be installed. The construction of the fence would be followed by installation of the aboveground structures and the electrical equipment. Substation equipment foundations would be drilled approximately 16 feet deep and geotechnical investigation drilling would be approximately 40 feet deep. Equipment lay-down areas for substation construction would be within the substation footprint.

All materials for the substation would be delivered by truck. The peak level of estimated truck trips would occur during import of approximately 6,000 cubic yards of fill material for grading around the substation site and removal and disposal of the almond trees (some of the excavated onsite soil may be reused). Import of this quantity of fill and removal of the organic waste in the same trucks would require between 325 and 350 round trips (650 to 700 total trips) of heavy-duty trucks (18 cubic yard capacity). In order to complete this grading and site preparation work within approximately 40 days, approximately 16 to 18 truck trips per day would be needed to import soil and dispose of organic matter.

Additional trucks would be needed to bring equipment, hardware, and other building materials (such as concrete) to the work site. The transformers would be delivered by heavy transport vehicles and off-loaded on-site by large cranes with support trucks. If necessary, a traffic control service would be used during transformer delivery.

On average, approximately four to eight laborers would commute to the project area from surrounding areas during construction. The majority of the truck traffic would use major streets, and when possible, would be scheduled for off-peak traffic hours. Some deliveries, such as cement truck deliveries, would occur during peak hours when footing work is being performed. PG&E's anticipated inventory of equipment, personnel, and scheduling for construction of the proposed substation is shown in Table B.1-1 below.



**Table B.1-1. Substation Construction**

Construction Phase	Duration	No. of Personnel	Equipment*	Estimated Usage/Day (hours)
Construction Management	Project Duration	-	1 Office Trailer	-
Grading (Substation, Access Road and Storm Water Basin)	50 days	8	1 980 Loader	8
			1 Grader	8
			1 Vibrator Compactor	3
			2 Water Trucks	8
			1 ½-Ton Pick-up Truck, 4X4	2
Survey	10 days	2	2 ½-Ton Pick-up Trucks, 4X4	8
Civil (Foundation, underground conduit, ground grid, etc.)	50 days	8	1 Office Trailer	8
			2 1-Ton Crew Cabs 4x4	4
			2 Dump Trucks	3
			1 Drill Rig	1
			1 Tractor	7
			1 Trencher	4
			1 Forklift	4
			1 Stake Bed Truck (gasoline or diesel)	2
Mechanical and Electrical Equipment Room (MEER, switchracks, conductor, circuit, breakers, etc.)	80 days	4	2 1-Ton Crew Cabs 4x4	6
			4 ½-Ton Pick-up Trucks, 4X4	4
			2 Carryall Vehicles	6
			2 Cranes	4
			1 Lift Truck	4
			2 Manlifts	4
Transformer Setup	20 days	5	2 1-Ton Crew Cabs 4x4	2
			1 Carryall vehicle	2
			1 Crane	6
			1 Forklift	6
			1 Low Bed Truck	4
			1 Processing Trailer	12
Fence Construction	10 days	4	1 ½-Ton Pick-up Truck 4x4	4
			1 1-Ton Crew Cab Flat Bed, 4X4	4
			1 Bobcat	8
			3 3-Ton Flat Bed Trucks	1
Paving	8 days	8	1 1-Ton Pick-up Truck 4x4	5
			1 Barbergreen	2
			2 Skip Loaders	6
			2 Dump Trucks	6
Test Facilities	40 days	2	1 ½-Ton Pick-up Truck 4x4	2

Source: PG&E, 2009.

### B.1.11.2 Access Road Construction

PG&E would construct a 16-foot-wide access road from Seventh Standard Road to the substation. The road would be approximately 700 feet in length. All existing vegetation would be cleared to accommodate the road. The access road and roads within the substation area would be paved. The substation entrance would have a locked gate for two-way traffic access to the substation.

### B.1.11.3 Subtransmission Lines

PG&E would follow the California Public Utilities Commission General Order 95 (Overhead Electric Lines Construction) for installing the new overhead 115 kV segment. Completing the 115 kV subtransmission interconnection would occur in two phases: installation of the new TSPs and conductor stringing. Drilling for TSP foundations (one single TSP and two dead-end structures) would be approximately 18 feet deep.

For stringing the electrical conductors (wires), sheaves<sup>2</sup> would be installed. Pulling and tensioning equipment would be positioned at the ends of the segment (at the substation and along Seventh Standard Road). First, a sock line, or a small cable used to pull in the conductor, would be pulled through and then attached to the conductor and pulled into place using ground equipment. After the sock line is installed, the conductor would be attached to the sock line and pulled in, or strung, using the tension-stringing method. This involves pulling the conductor under a controlled tension to keep the conductor elevated. After the conductor is pulled into place, sags would be adjusted to a pre-calculated level. The conductor would then be clamped to the end of each insulator as the sheaves are removed.

### B.1.11.4 Distribution Lines

Within the substation, the 21 kV distribution feeder lines would be placed underground in conduit as they leave the substation and trench depths would be approximately 5 feet. The lines may surface at Seventh Standard Road or remain underground. Line trucks and boom trucks would be used for construction. If the distribution line is above ground, the wood poles would be approximately 50 feet tall and would be spaced on average approximately 225 feet apart. Typically, the poles would require a mechanical auger to dig a hole approximately six feet in depth.

**Distribution Line Relocation.** For pole removal, PG&E would begin by loosening the poles with a hydraulic jack. A line truck would remove each pole and load it onto a trailer for delivery to a third-party location. The holes would be filled with native soil from area construction activities.

### B.1.11.5 Cleanup

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. Upon completion of construction activities, a final cleanup of the work area would be performed. The contractor would ensure that waste created by the removed almond trees would be disposed of in accordance with applicable rules and regulations.

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<sup>2</sup> Sheaves are rollers connected to the structure cross-arm that allow the conductor to be pulled through each structure until the conductor is ready to be pulled up to the final tension position.

### B.1.11.6 Construction Workforce and Schedule

Construction is scheduled to begin in the summer of 2009. Construction activities would take approximately six months to complete. Construction crews would work during daylight hours on weekdays unless otherwise required for project safety or to take advantage of necessary line clearances. The tasks will be conducted in stages; therefore, personnel and equipment would not be working on all tasks simultaneously at a given location. Thus, personnel would conduct multiple functions and equipment would access work locations on multiple trips. Construction would require up to approximately 15 crew members during peak activity, which is expected to occur between January 2010 and May 2010. The workforce would primarily be filled with PG&E employees or a contract workforce. Laborers employed during the construction of the project would commute to the area or stay in nearby hotels for the duration of the project. No new workers would be hired specifically for this project, so there would be no increase in the local population and no need for increased local housing.

Contractor construction personnel would be from within Kern County or adjacent areas. Anticipated roles for personnel are summarized in Table B.1-1 (Substation Construction). PG&E expects to conduct construction activities in a manner consistent with the City of Bakersfield noise ordinances.

Construction work crews would bring their own drinking water to the site. The contractor would supply water for construction purposes from an offsite source.

PG&E's projected completion date for the substation and subtransmission line would be mid-2010. Following completion of construction, PG&E would energize and test subtransmission line components. PG&E's expected operating date for the Proposed Project is mid-to late-2010.

## B.1.12 Operations and Maintenance

### B.1.12.1 Substation Operations, Maintenance, and Inspection

Operation of distribution equipment at the Seventh Standard Substation would be controlled remotely from the Midway Substation. Telecommunications lines would connect the station and line alarms to the control center. Permanent parking for facility inspections, operations, and maintenance would be entirely within the substation site or on the access road at the entrance to the substation site.

All structures at the Seventh Standard Substation would be inspected annually on the ground to detect problems with corrosion, equipment alignment, or foundations. Routine substation inspection includes inspection of hardware, insulator keys, and conductors. Trimming of vegetation would be performed in accordance with the CPUC's General Order 95. Emergency inspections would occur as necessary.

### B.1.12.2 Subtransmission Lines Operations, Maintenance, and Inspection

PG&E would routinely inspect the subtransmission vaults and other accessible components. The inspections may lead to routine and preventive maintenance. There may also be emergency repair and maintenance for service continuity. No additional PG&E personnel, beyond normal existing staffing levels, would be required to operate or maintain the subtransmission lines.

### B.1.13 Applicant Proposed Measures

PG&E proposes to implement measures to ensure the Proposed Project would occur with minimal environmental impacts in a manner consistent with applicable rules and regulations. PG&E proposes to implement these measures during the design, construction, and operation of the Proposed Project in order to avoid or minimize potential environmental impacts.

Applicant Proposed Measures (APMs) listed in Table B.1-2 are considered part of the Proposed Project and are considered in the evaluation of environmental impacts (see Section B.3, Environmental Analysis and Mitigation). CPUC approval would be based upon PG&E adhering to the Proposed Project as described in this document, including this project description and the APMs, as well as any adopted mitigation measures identified by this Initial Study.

Table B.1-2 details each APM by environmental issue area. In some cases, mitigation measures presented in Section B.3 either expand upon or add detail to the APMs presented in Table B.1-2 if necessary, to ensure that potential impacts would be reduced to less than significant levels.

**Table B.1-2. Applicant Proposed Measures (APMs)**

APM Number	Issue Area
<b>Air Quality</b>	
APM Air-1	If feasible, construction workers will carpool to the job site. Park and Ride locations are located on Weedpatch Highway in Bakersfield and in Delano off of State Route 99.
APM Air-2	No vehicles will be allowed to idle unnecessarily. Certain diesel powered vehicles require extended warm-up times that limit their availability following their ignition. When these vehicles are needed for repetitive tasks, they may require more idling time to make them effective. A common sense approach to idling will be employed. If vehicles are not required for use immediately or continuously, the engine will be shut-off.
APM Air-3	Construction equipment will be properly tuned and maintained per manufacturing specifications.
APM Air-4	PG&E will use low-emission construction equipment where available and feasible.
APM Air-5	The Seventh Standard Substation will be incorporated into PG&E's system-wide sulfur hexafluoride (SF6) emissions reduction program.
APM Air-6	Visible dust emissions may not exceed 20 percent opacity during periods when soil is being disturbed by equipment or wind at any time.
APM Air-7	Soil will be stabilized after normal working hours and on weekends by applying water to form a visible crust on the soil and restricting vehicle access. In addition, all disturbed areas, including storage piles which are not being actively utilized for construction purposes, shall be effectively stabilized of dust using water, chemical stabilizer/suppressant, and a cover such as a tarp or other suitable cover or vegetative ground cover. If trackout or carryout occur and extend more than 50 feet from the exit point onto a paved road, an appropriate cleaning device, such as a blower or PM10-efficient street sweeper must be used.
APM Air-8	All land clearing, grubbing, scraping, excavation, land leveling, grading, and cut and fill shall be effectively controlled of fugitive dust emissions utilizing application of water by presoaking.
APM Air-9	When materials are transported off-site, all material shall be covered or effectively wet to limit visible dust emissions, and at least six inches of freeboard space shall be open from the top of the container.
APM Air-10	Vehicle speed should be limited to 15 miles per hour or less when traveling off of paved roads.
<b>Biological Resources</b>	
APM Bio-1	If construction is to occur during the avian-nesting season (February 1 through August 31), a pre-construction migratory bird nesting and raptor survey will be performed by a qualified biologist one to three weeks prior to construction. If nesting raptors are identified in areas susceptible to disturbance from construction activities, a sufficient spatial buffer zone shall be employed during construction activities until nestlings have fledged.
APM Bio-2	All equipment shall be washed prior to entering the construction site for the first time to reduce the potential spread of noxious weeds.

**Table B.1-2. Applicant Proposed Measures (APMs)**

APM Bio-3	Impacts to the San Joaquin kit fox will be offset through mitigation to a mitigation fund as required by the City of Bakersfield, according to the Metropolitan Bakersfield Habitat Conservation Plan.
APM Bio-4	Project vehicles will not exceed 20 mph off of paved roads.
APM Bio-5	All excavated trenches over two feet in depth will be sloped or have escape ramps installed which are suitable for the escape of the kit fox. All trenches shall be inspected for wildlife prior to backfilling.
APM Bio-6	Any open-ended pipes shall be capped if left overnight or inspected for wildlife prior to moving them. If a San Joaquin kit fox is discovered in a pipe, then the pipe shall not be moved until the fox has escaped and the U.S. Fish and Wildlife Service has been consulted.
APM Bio-7	All trash shall be properly contained, especially food-related items.
APM Bio-8	No pets are allowed on the project site.
APM Bio-9	The use of rodenticides and herbicides will be restricted. Label and other restrictions by the EPA, California Department of Food and Agriculture, and other State and Federal legislation will be followed. If rodent control is used, then zinc phosphide should be used.
APM Bio-10	Environmental awareness training will be conducted for all laborers by a person knowledgeable in kit fox biology. The training will explain measures to prevent impacts to the kit fox, as well as its protection under the Endangered Species Act.

**Cultural Resources**

APM Cult-1	If human remains are discovered within the project area during any phase of construction, work within 50 feet of the remains will be suspended immediately and PG&E and/or their representative will immediately notify the respective county coroner. If the remains are determined by the coroner to be Native American, the American Heritage Commission (NAHC) will be notified within 24 hours, and the guidelines of the NAHC will be adhered to in the treatment and disposition of the remains. PG&E will also retain a professional archaeological consultant with Native American burial experience who will conduct a field investigation of the specific site and consult with the Most Likely Descendant identified by the NAHC. As necessary, the archaeological consultant may provide professional assistance to the Most Likely Descendant including the excavation and removal of human remains. PG&E or its appointed representative will implement any mitigation before the resumption of activities at the site where the remains were discovered.
APM Pal-1	If paleontological remains are discovered during construction, construction will cease or be directed away from the discovery, and the potential resource will be evaluated by a qualified paleontologist. The paleontologist will recommend appropriate procedure methods.

**Hazards and Hazardous Materials**

APM Haz-1	Emergency-spill response and clean up kits will be onsite where they are immediately available to respond to an accidental release of a hazardous fluid or material.
APM Haz-2	A water truck shall be onsite, as deemed necessary by the foreman, during dry conditions to prevent the ignition of a wildfire. The work site shall be sprayed a minimum of three times per day.

**Hydrology and Water Quality**

APM Hydro-1	PG&E will develop a Storm Water Pollution Prevention Plan for the project to prevent sedimentation of waterways resulting from the release of sediment from the construction site.
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**Noise**

APM Noise-1	Construction will occur during daylight hours (7 a.m. to 6 p.m.).
APM Noise-2	Construction equipment will use noise reduction devices that are no less effective than those originally installed by the manufacturer.

Note: Applicant Proposed Measures appear in the Proponent's Environmental Assessment (A.09-03-004, Chapter 5).

## B.1.14 EMF Summary

### B.1.14.1 Electric and Magnetic Fields

Recognizing that there is a great deal of public interest and concern regarding potential health effects from exposure to electric and magnetic fields (EMF) from power lines, this document provides information regarding EMF associated with electric utility facilities and the potential effects of the Proposed

Project related to public health and safety. Potential health effects from exposure to electric fields from power lines (produced by the existence of an electric charge, such as an electron, ion, or proton, in the volume of space or medium that surrounds it) are typically not of concern since electric fields are effectively shielded by materials such as trees, walls, etc., therefore, the majority of the following information related to EMF focuses primarily on exposure to magnetic fields (invisible fields created by moving charges) from power lines. However, this Initial Study does not consider magnetic fields in the context of CEQA and determination of environmental impact. This is because (a) there is no agreement among scientists that EMF does create a potential health risk, and (b) there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented for the benefit of the public and decisionmakers.

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remains inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. Most recently the International Agency for Research on Cancer (IARC) and the California Department of Health Services (DHS) both classified EMF as a *possible* carcinogen.

Currently, there are no applicable regulations related to EMF levels from power lines or substations. However, following a decision from 1993 (D.93-11-013) that was reaffirmed on January 27, 2006 (D.06-01-042), the CPUC requires utilities to incorporate “low-cost” or “no-cost” measures to mitigate EMF from new or upgraded electrical utility facilities up to approximately 4 percent of total project cost. To comply, PG&E has incorporated such measures to reduce magnetic field levels in the vicinity of the proposed substation and subtransmission lines.

#### **B.1.14.2 EMF and the Seventh Standard Substation Project**

In accordance with Section X(A) of GO 131-D, CPUC Decision No. D.06-01-042 and PG&E's EMF Design Guidelines prepared in accordance with the EMF Decision, PG&E will incorporate “no cost” and “low cost” magnetic field reduction steps in the design of the proposed substation. The design guidelines include the following measures that may be available to reduce the magnetic field strength levels from electric power facilities:

- Compacting the equipment spacing within the substation using the 230 kV Bantam Substation design;
- Installing low-side metal clad switchgear to reduce low-side bus phase spacing from three feet (used in low-profile buses) to one foot, reducing magnetic field contribution from the 21 kV bus;
- Use of underground 21 kV feeder terminations to the property limit to reduce EMF strength outside of the substation; and
- Increasing the height of overhead lines to reduce EMF strength at ground level.

Further information regarding EMF and the Seventh Standard Substation Project can be found in Appendix D of the PEA, Electric and Magnetic Fields Information, and in Exhibit F, Seventh Standard FMP checklist.

#### **B.1.15 Other Public Agencies Whose Approval is Required**

The CPUC is the lead agency for CEQA review of this project. In accordance with CPUC General Order No. 131-D, PG&E prepared and submitted a Proponent's Environmental Assessment as part of its application for a Permit to Construct (PTC). The CPUC has exclusive authority to approve or deny

PG&E’s application; however, various permits from other agencies may also need to be obtained by PG&E for the Proposed Project. If the CPUC issues a PTC, it would provide overall project approval and certify compliance of the project with CEQA. In addition to the PTC, Table B.1-3 summarizes the permits from other federal, State, and local agencies that may be needed for the project.

**Table B.1-3. Permits that May Be Required for the Seventh Standard Substation Project**

Agency	Jurisdiction	Requirements
<b>Federal/State Agencies</b>		
California Department of Transportation	Highways and State-owned roadways	Transportation Permit for movement of vehicles that may qualify as an oversized or excessive load (if required)
California Office of Historic Preservation	Consultation (through CEQA review process)	Cultural resources management (if appropriate)
Regional Water Quality Control Board (RWQCB) – Central Valley Region	National Pollution Discharge Elimination System, General Construction Storm Water Pollution Prevention Plan (SWPPP)	Submittal of Notice of Intent (NOI) to Regional Board and preparation of SWPPP
RWQCB – Central Valley Region	Spill Prevention Control and Countermeasure (SPCC) for mineral oil in transformers	Calculation of containment requirements and system design
California Department of Fish and Game	Endangered species consultation	Consultation on State-listed species; possible impacts to threatened and endangered species
<b>Local/Regional Agencies</b>		
City of Bakersfield	Building and Grading Permits and Safety Requirements	Ministerial approval for construction of new facilities
City of Shafter	Roadway Encroachment and/or Transportation Permit	Ministerial approval for possible closure of roads for transportation of heavy or oversized equipment and construction of facilities within public roadway right-of-way
Kern County	Roadway Encroachment and/or Transportation Permit	Ministerial approval for possible closure of roads for transportation of heavy or oversized equipment and construction of facilities within public roadway right-of-way