

2.0 PROJECT DESCRIPTION

2.1 OVERVIEW

PG&E proposes to reinforce the electric transmission system in Sonoma County by replacing the conductor (reconductoring) on a 9.9-mile-long section of the Fulton-Hopland 60 kV Power Line (Fulton-Hopland Line) between the communities of Fulton and Healdsburg. The Fulton-Fitch Mountain Reconductoring Project (project) will also include replacing poles along 8.1 miles of the Fulton-Hopland Line, removing the first pole and replacing the second pole of the Fitch Mountain #1 Tap 60 kV Power Line (Fitch Mountain #1 Tap), replacing conductor on 1.3 miles of the Geysers #12-Fulton 230 kV Transmission Line (Geysers #12-Fulton Line), and making minor modifications to Fitch Mountain Substation.

PG&E owns and operates the Fulton-Hopland Line and the Fulton No. 1 60 kV Power Line (Fulton No. 1 Line), which serve electric customers in Sonoma County, including the communities of Healdsburg and Windsor. South of the City of Healdsburg, the Fitch Mountain #1 Tap and Fitch Mountain #2 Tap interconnect the Fulton-Hopland and the Fulton No. 1 lines through Fitch Mountain Substation and provide a loop for system stability. An outage on the Fulton No. 1 Line could overload the Fulton-Hopland Line above its re-rated summer emergency rating. The project will reconductor the Fulton-Hopland Line to address this issue.

The project consists of the following components:

- **Fulton-Shiloh segment.** For the first 1.8 miles of the project, the existing, single-circuit Fulton-Hopland Line is primarily underbuild (supported on the same structures) on tubular steel poles (TSPs) that also support the double-circuit Geysers-Fulton 230 kV Transmission Line. Although the existing TSPs will remain in place, conductors on the existing Fulton-Hopland 60 kV Line will be replaced. In addition, to provide adequate clearance between lines, conductors on approximately 1.3 miles of one of the 230 kV circuits—the Geysers #12-Fulton Line—will also be replaced.
- **Shiloh-Fitch segment.** The existing Fulton-Hopland Line between the Geysers-Fulton 230 kV Transmission Line takeoff pole and the Fitch Mountain #1 Tap, a distance of 8.1 miles, is supported primarily by wood poles. To support the new conductor, these poles will be replaced with somewhat-taller light duty steel (LDS) poles or TSPs. The first pole on the Fitch Mountain #1 Tap will be removed and the second pole replaced as a result of construction.
- **Substation modifications.** Certain substation facilities at Fitch Mountain Substation will be replaced and upgraded to connect the reconducted line into the existing system.

No material changes in maintenance and operations activities are anticipated with implementation of the project.

2.2 PROJECT OBJECTIVE, PURPOSE, AND NEED

PG&E currently owns and operates the Fulton-Hopland Line, which serves electric customers in Sonoma County, including the communities of Healdsburg and Windsor. The existing conductor on the Fulton-Hopland Line between Fulton Substation and Fitch Mountain #1 Tap is 4/0 aluminum, which has a summer interior rating of 375 amperes (amps). Planning analyses reviewed by the California Independent Systems Operator (CAISO) have determined that an outage of the Fulton No. 1 Line during peak loading conditions could potentially overload the Fulton-Hopland Line above its re-rated summer emergency rating. Accordingly, to address this issue and meet increasing electrical demand, PG&E proposes to re-conductor the Fulton-Hopland Line between Fulton Substation and Fitch Mountain #1 Tap with 477 aluminum, which has a summer interior rating of 1,126 amps. CAISO approved the project in 2009.

To handle the higher rated conductor, certain facilities at Fitch Mountain Substation will be replaced and dead-end structures will be upgraded with SF₆ breakers to provide increased system reliability. Approximately 1.3 miles of the Geysers #12-Fulton 230 kV Line will be re-conducted to provide adequate spacing between the Fulton-Hopland and Geysers #12-Fulton lines. The capacity of the Geysers #12-Fulton 230 kV Line will not be increased.

Thus, the objectives of the project are to:

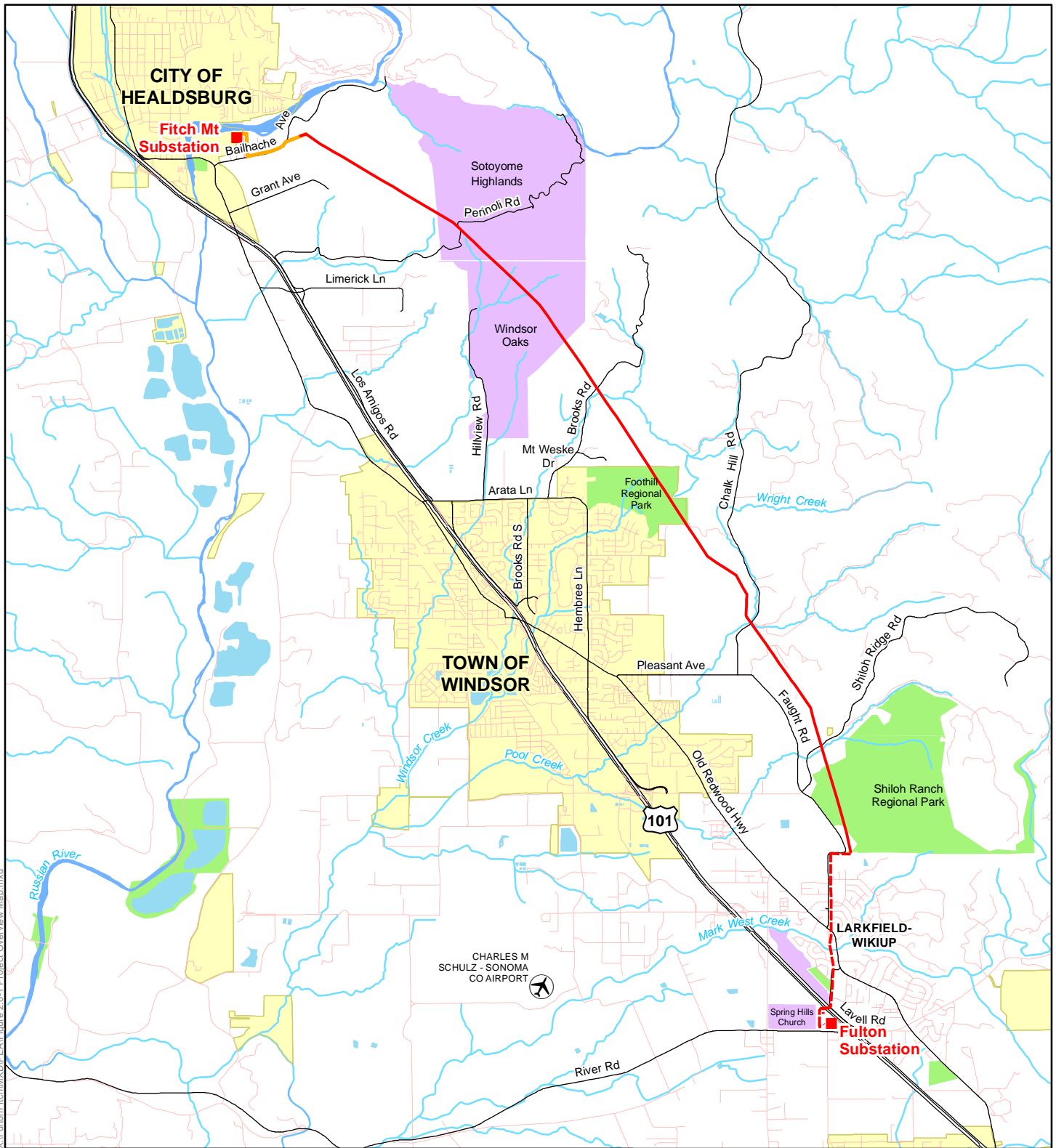
- Mitigate the identified system reliability issues in accordance with CAISO and North American Electric Reliability Corporation (NERC) requirements by alleviating a potential overload condition;
- increase the capacity of the Fulton-Hopland 60 kV Line to help meet increasing demand; and
- design and build the project in a safe, cost-effective manner that will also minimize environmental impacts.

2.3 PROJECT LOCATION

The project is located in central Sonoma County, between Fulton Substation and Fitch Mountain Substation, east of the Town of Windsor and the City of Healdsburg on the eastern margin of the Santa Rosa Valley. The project consists entirely of modifications to existing power lines. It originates at Fulton Substation in Fulton, a census-designated place¹ in the Santa Rosa Valley, and travels north through residential neighborhoods, rural residential, regional parks, vineyards, rangeland, woodland, and open space to the second pole along the Fitch Mountain #1 Tap, located on a ridge on the Minaglia Ranch, south of Bailhache Avenue. Project activities will also occur at Fitch Mountain Substation, east of the City of Healdsburg, between the Russian River and Bailhache Avenue.

Detailed location information is provided by project component in the following paragraphs, and is illustrated in Figure 2.0-1: Project Overview Map.

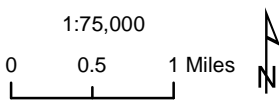
¹ A census-designated place (CDP) is a concentration of population identified by the United States Census Bureau.



X:\Fulton\Fitch\MXD\PEA\Figure 2.0-1 Project Overview Map.mxd

- Substation
- Shiloh-Fitch Segment
- - - Fulton-Shiloh Segment
- Fitch Mountain #1 Tap
- Conservation Easement
- Regional Park
- City Limits

Figure 2.0-1
 Project Overview Map
 Fulton-Fitch Mountain Reconductoring Project



2.3.1 FULTON-SHILOH SEGMENT

The Fulton-Shiloh segment originates at an existing TSP located within Fulton Substation, at the southern end of the project. The existing Fulton-Hopland Line leaves the south side of Fulton Substation and follows the western and northern borders of Fulton Substation as underbuild on the same H-frame structures as the substation’s 230 kV cap bank transmission line for approximately 0.3 mile, joining PG&E’s double-circuit Geysers-Fulton 230 kV Transmission Line as underbuild on the same TSPs on the north side of the substation. The co-located lines cross Highway 101 in a northeasterly direction, and continue north on the west side of Lavell Road, across the street from Mark West Elementary School, for approximately 0.3 mile. The lines then continue overland for approximately 0.3 mile, crossing Deerwood Drive, Mark West Creek, and the Larkfield-Wikiup residential neighborhood. The lines cross Old Redwood Highway to parallel the east side of Faught Road for approximately 0.7 mile, crossing the joint campus of the San Miguel Elementary and Mark West Charter schools, then cross Faught Road where they turn east and parallel the north side of the road for approximately 0.2 mile. The Fulton-Shiloh segment terminates at an existing TSP in the southwest corner of Sonoma County’s Shiloh Ranch Regional Park; the Geysers-Fulton 230 kV lines continue northeast.

In this segment, approximately 1.8 miles of the existing, single-circuit Fulton-Hopland Line will be reconducted. Additionally, to provide adequate spacing (clearance) between lines and structures, 1.3 miles of the Geysers #12-Fulton 230 kV line will be reconducted, one wood pole on a 12 kV distribution line along Old Redwood Highway will be relocated, and two street lights along Faught Road will be lowered or moved.

2.3.2 SHILOH-FITCH SEGMENT

The Shiloh-Fitch segment begins at the existing TSP in the southwest corner of Shiloh Ranch Regional Park, where the 60 kV Fulton-Hopland Line splits off from the double-circuit Geysers-Fulton 230 kV Transmission Line. The Fulton-Hopland Line, now supported on its own, primarily-wood poles, travels north-northwest for approximately 1.3 miles, crossing Shiloh Ranch Regional Park and Shiloh Ridge Road, and skirting vineyards and rural residential areas. It continues in a northwesterly direction for approximately 1 mile, crossing Chalk Hill Road before climbing and following a ridgeline for approximately 0.7 mile. The line continues north-northwest for 2.6 miles, crossing vineyards, rangeland, and woodland, Foothill Oaks Regional Park, Windsor Creek, and Brooks Road, and entering Windsor Oaks Vineyards from the southwest. From here, the line heads northwest for 1 mile, crossing into Sotoyome Highlands from the south side. The line continues northwest for an additional 1.5 miles across rangeland to its interconnection with the Fitch Mountain #1 Tap on a ridge in the Minaglia Ranch just east of the City of Healdsburg, south of the Russian River and Bailhache Avenue.

In this segment, approximately 8.1 miles of the existing, single-circuit Fulton-Hopland Line will be replaced. To support the new conductors, existing poles will either be replaced with taller LDS poles or TSPs, or removed. The first pole on the Fitch Mountain #1 Tap will be removed, and the second pole will be replaced with a taller LDS pole.

2.3.3 SUBSTATION MODIFICATIONS

Fitch Mountain Substation is located at 195 Bailhache Avenue in unincorporated Sonoma County, east of Healdsburg, on an approximately 1-acre parcel. The substation is bordered on the north and west by a mineral resource processing plant, and on the east and south by rural residential areas. Certain facilities will be replaced and upgraded at Fitch Mountain Substation to handle the higher-rated conductor on the Fulton-Hopland Line.

2.4 EXISTING SYSTEM

Fulton Substation serves an area that includes the communities of Fulton, Windsor, and Healdsburg (see Figure 2.0-2: Existing System). Power to the area originates in The Geysers, the world's largest geothermal field, located approximately 12 miles north of the project area in the Mayacamas Mountains. The point of interconnection for much of The Geysers' geothermal power generation is Fulton Substation, which also serves as a regional electric switching station. Fulton Substation includes 230 kV, 115 kV, and 60 kV switching and voltage transforming facilities, as well as 12 kV distribution transforming facilities.

Power from The Geysers geothermal field is carried to Fulton Substation by the double-circuit Geysers-Fulton 230 kV Transmission Line, which consists of the Geysers #12-Fulton and Geysers #17-Fulton circuits and provides electric service in southern Sonoma and Napa counties. Power is stepped down at Fulton Substation to either 115 kV or 60 kV, depending on the destination. Two 60 kV power lines—the Fulton No. 1 and the Fulton-Hopland lines—originate at and travel north from Fulton Substation. These lines provide electric power to the City of Healdsburg's Badger Substation and PG&E's distribution substations at Fitch Mountain and Geyserville.

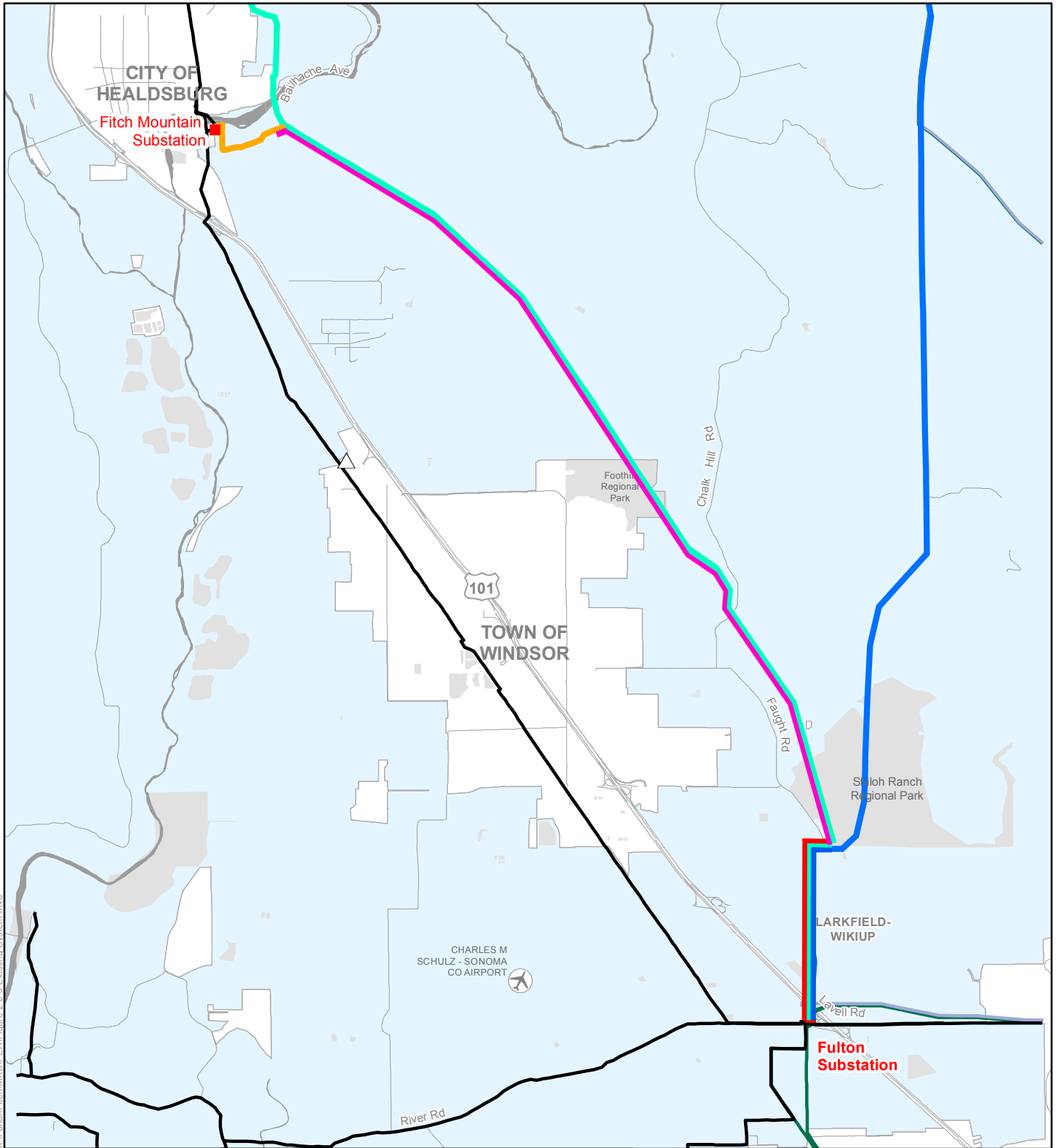
Fitch Mountain Substation serves northern Windsor and the distribution facilities east and west of the City of Healdsburg. The substation is connected to the Fulton-Hopland Line to the east by Fitch Mountain #1 Tap; the Fitch Mountain #2 Tap connects the substation to the Fulton No. 1 Line to the west, creating a loop for system reliability. Geyserville Substation serves customers in the City of Geyserville and surrounding areas; once this project is completed, Geyserville Substation will have an alternate source of power during an outage. The existing system will not be reconfigured as part of the project.

2.5 PROPOSED PROJECT

2.5.1 POWER LINE

2.5.1.1 Fulton-Shiloh Segment

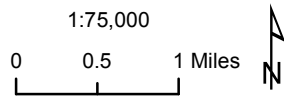
For the first 1.8 miles of the project, the existing, single-circuit Fulton-Hopland Line is primarily underbuild (supported on the same structures) on TSPs that also support the double-circuit Geysers-Fulton 230 kV Transmission Line. The existing TSPs will remain in place, but the 60 kV conductors on the Fulton-Hopland 60 kV Line will be replaced. In addition, to provide adequate spacing between lines, the 230 kV conductors on approximately 1.3 miles of the Geysers #12-Fulton Line will be replaced. One wood pole along an existing 12 kV distribution line will be lowered and two street lights will be lowered or moved to meet necessary clearance requirements for the 60 kV conductor.



X:\Fulton\Fitch\MXD\PEA\Figure 2.0-3 Existing System.mxd

- | | | |
|---|---|---|
| ■ Project Substation | Project Lines | Area Lines |
| △ Area Substation | — Fulton-Hopland Line | — 60 kV |
| — Shiloh-Fitch Segment | — Fitch Mountain #1 Tap | — 115 kV |
| — Fulton-Shiloh Segment | — Geyses-Fulton Lines | — 230 kv |

Figure 2.0-2
Existing System Map
Fulton-Fitch Mountain Reconductoring Project



In this segment, approximately 1.8 miles of the single-circuit Fulton-Hopland Line, currently 4/0 aluminum, will be replaced with a combination of 477 kcmil² aluminum conductor steel supported (ACSS) 24/7 strand “Flicker,” and 477 kcmil aluminum conductor composite reinforced (ACCR) 26/7 strand “Hawk.”

Approximately 1.3 miles of the existing 230 kV conductor on the Geysers #12-Fulton Line, currently bundled 1113 kcmil all aluminum conductor (AAC), will be replaced with 954 kcmil ACSS 54/7 “Cardinal” conductor. Replacing this conductor will not increase the capacity of the 230 kV line.

Poles carrying the double-circuit Geysers-Fulton 230 kV Transmission Line and single-circuit Fulton-Hopland Line are configured to carry six individual 230 kV conductors and three individual 60 kV conductors. The 230 kV conductors are arranged in a vertical configuration, with three conductors on each side of the pole. The 60 kV conductors are arranged in a vertical delta configuration, with two conductors on one side of the pole and one on the other, in an alternating pattern. The new conductor will be replaced in the same configuration.

To optimize operation and maintenance activities, insulators along the 1.8 miles of Fulton-Hopland and 1.3 miles of Geysers #12-Fulton lines will be replaced, primarily with ceramic insulators; composite insulators will be used at the TSP and dead-end structure at Fulton Substation.

In accordance with CPUC General Order 95, the lowest conductor will be installed a minimum of 28 feet above the ground. The minimum ground-to-conductor clearance above Highway 101 will be 29 feet. The 60 kV conductor will have minimum separation distances of 10 feet vertically and 15 feet horizontally. The minimum separation distances between the 60 kV conductor underbuild and the 230 kV conductor will be 20 feet vertically and 15 feet horizontally. The existing span lengths between poles range from approximately 150 to 600 feet. Poles are not being replaced along this segment.

To provide adequate space below conductors, one wood pole of a 12 kV distribution line along Old Redwood Highway will be lowered and two street lights along Faught Road will be lowered or moved.

2.5.1.2 Shiloh-Fitch Segment

In this segment, approximately 8.1 miles of the existing single-circuit Fulton-Hopland Line will be replaced with 477 kcmil ACSS 24/7 Flicker conductor. To support this conductor, most pole structures—the majority of which are wood—will be replaced with a combination of taller LDS poles and TSPs (see Section 2.5.2.2). Each pole will be configured to carry three individual conductors. The majority of poles will carry conductor arranged in a delta configuration; in locations where an LDS pole is used and the line changes direction, the three conductors will be arranged vertically in a single vertical plane.

² 1 kcmil = 0.5067 millimeter².

In accordance with General Order 95, the lowest conductor will be installed a minimum of 28 feet above the ground. The conductors will be installed with minimum separation distances of approximately 10 feet vertically and approximately 15 feet horizontally, and attached to the transmission poles using ceramic insulators typically measuring 10 inches in diameter and 4 feet in length. Span lengths between poles, which currently range from approximately 200 to 1,600 feet, will remain approximately the same. The spans between TSPs range from approximately 1,500 feet and 1,600 feet, and the spans between LDS poles ranges from approximately 200 to 1,300 feet. To optimize operation and maintenance activities, insulators along the 8.1 miles will be replaced during construction.

Fitch Mountain #1 Tap is a power line that extends one-way (i.e., a tap) from an existing wood pole on the Fulton-Hopland Line to Fitch Mountain Substation. PG&E will replace the existing wood pole at this intersection with a TSP. Although the Fulton-Hopland Line continues north from this pole, the reconductoring of the Fulton-Hopland Line ends at the pole.

The conductor on Fitch Mountain #1 Tap is not being replaced. However, because the new TSP at the intersection with the Fulton-Hopland Line eliminates the need for the first pole of the Fitch Mountain #1 Tap, construction crews will remove that pole and replace the second pole on the Fitch Mountain #1 Tap with an LDS pole so that proper line tension can be established. The existing conductor on the Fitch Mountain #1 Tap, which is approximately 650 feet long, will be re-installed in approximately its original alignment between the new TSP and LDS pole, with additional conductor spliced in, as necessary, to adjust the span sway and clearance.

2.5.2 POLES

2.5.2.1 Fulton-Shiloh Segment

No poles will be replaced within the Fulton-Shiloh segment.

2.5.2.2 Shiloh-Fitch Segment

Pole Replacement and Removal

The Shiloh-Fitch segment is currently supported by approximately 71 pole structures that range in height from approximately 36 to 66 feet. The following pole replacement work is planned on this segment³:

- **Wood Poles.** There are approximately 63 existing wood poles. Three wood poles, including the first wood pole on the Fitch Mountain Tap, will be removed and not replaced. Fifty-seven wood poles will be replaced with LDS poles. Three wood poles will be replaced with TSPs.
- **LDS Poles.** There are three existing LDS poles. Two LDS poles will be replaced with LDS poles, and one LDS pole located at a canyon edge will be replaced with a TSP.

³ These project details are approximate, preliminary and subject to change with CPUC requirements, final engineering, ground conditions at time of construction, and other factors.

- **H-Frame Structure.** There is one existing H-Frame structure consisting of two individual wood poles. One of the wood poles carries a distribution line, and will be shortened and left in place. The other wood pole will be replaced with a TSP.
- **Three-Pole Structures.** There are four existing three-pole structures. Because one of the wood poles on one of these structures has utilities co-located on it, that pole will be shortened and left in place. The other two poles on this three-pole structure will be removed and replaced with a TSP. Each of the other three-pole structures will be replaced with a single pole, two with LDS poles and one with a TSP.

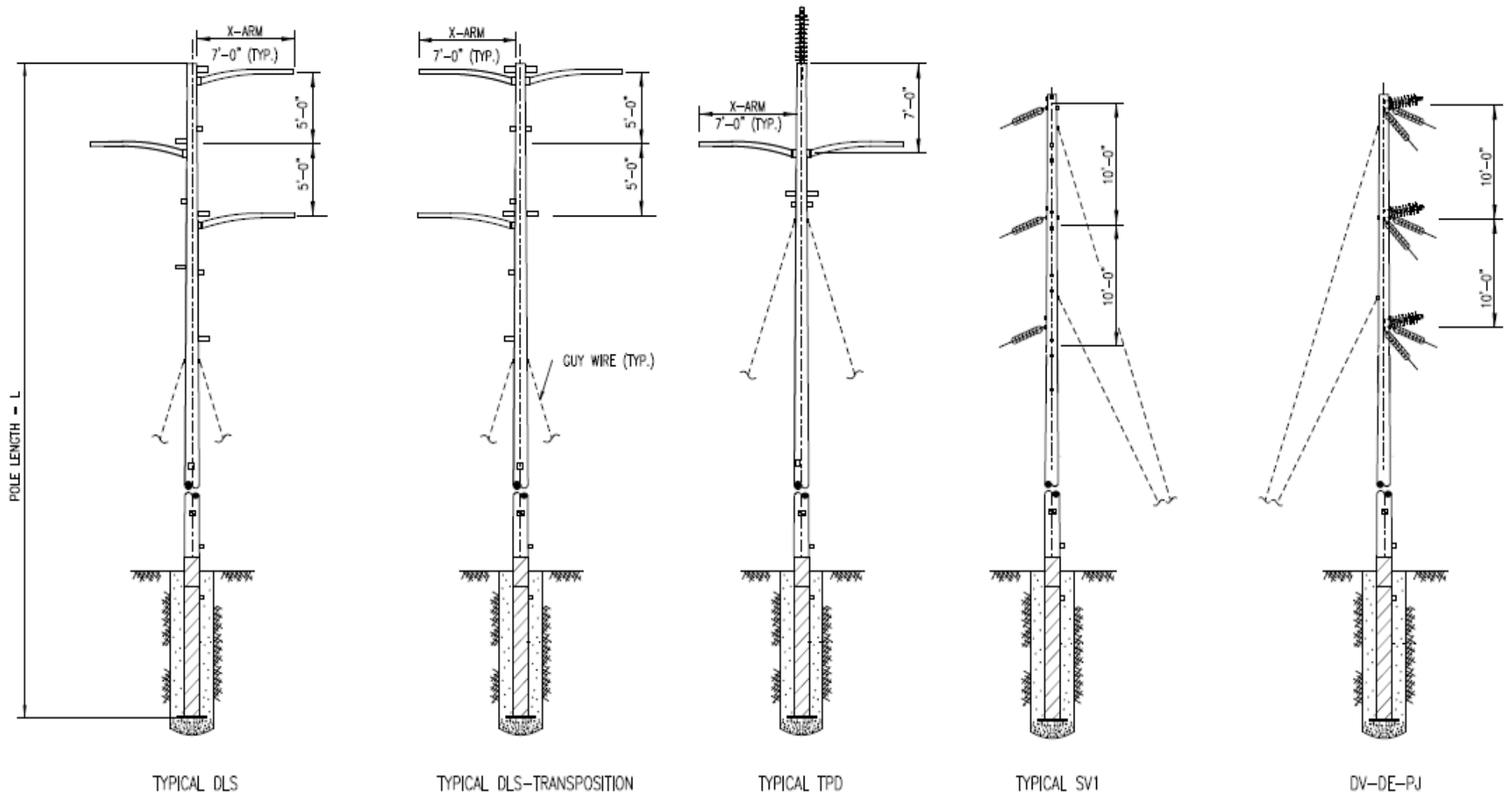
LDS poles will be approximately 16 inches wide at the base and range in height from approximately 58 to 73 feet. Tangent poles will be used along straight portions of the alignment and angle poles will be used when the run of poles changes direction. The replacement LDS poles will be set directly into the ground. The depth at which poles will be embedded into the ground is dependent on variables such as topography, pole height, span length, and soil properties; typically each LDS pole will be embedded approximately 14 feet. New guy wires will be installed on some LDS poles to balance line tension and provide additional stability. In most cases, new guy anchors for structures replaced with LDS poles will replace existing guys and will be located within approximately 5 feet of the existing configuration; however, new guy wires will be installed in additional locations where needed to provide stability for the taller structures.

TSPs will be approximately 2 feet wide at the base and range in height from approximately 60 to 75 feet. All TSPs will have concrete pier foundations measuring approximately 5 feet in diameter and 20 feet deep, and extending 1 foot above ground. Any existing guy wires will be removed for structures replaced with TSPs.

All steel poles will have a matte brown, self-weathering surface. New poles will be installed within approximately 35 feet of the existing pole location (typically within 12 feet) and in line with the existing conductor. Drawings of the typical designs for LDS poles and TSPs are provided in Figures 2.0-3: Typical Light-Duty Steel Poles and 2.0-4: Typical Tubular Steel Pole.

Temporary Wood Poles

A temporary wood pole may be installed at each pull and tension site to serve as a snub pole for those replacement pole structures that are not designed to accommodate the forces of pulling and tensioning new conductor. Snub poles will be set directly in the ground within the pull site and may be guyed for stability.



NOTES:
 APPROXIMATE POLE LENGTH= 70-85'

FIGURE 2.0-3
 Typical Light Duty Steel Pole
 Fulton-Fitch Mountain Reconductoring Project



NOT TO SCALE

Preliminary and subject to change based on California Public Utilities Commission requirements, final engineering, and other factors.

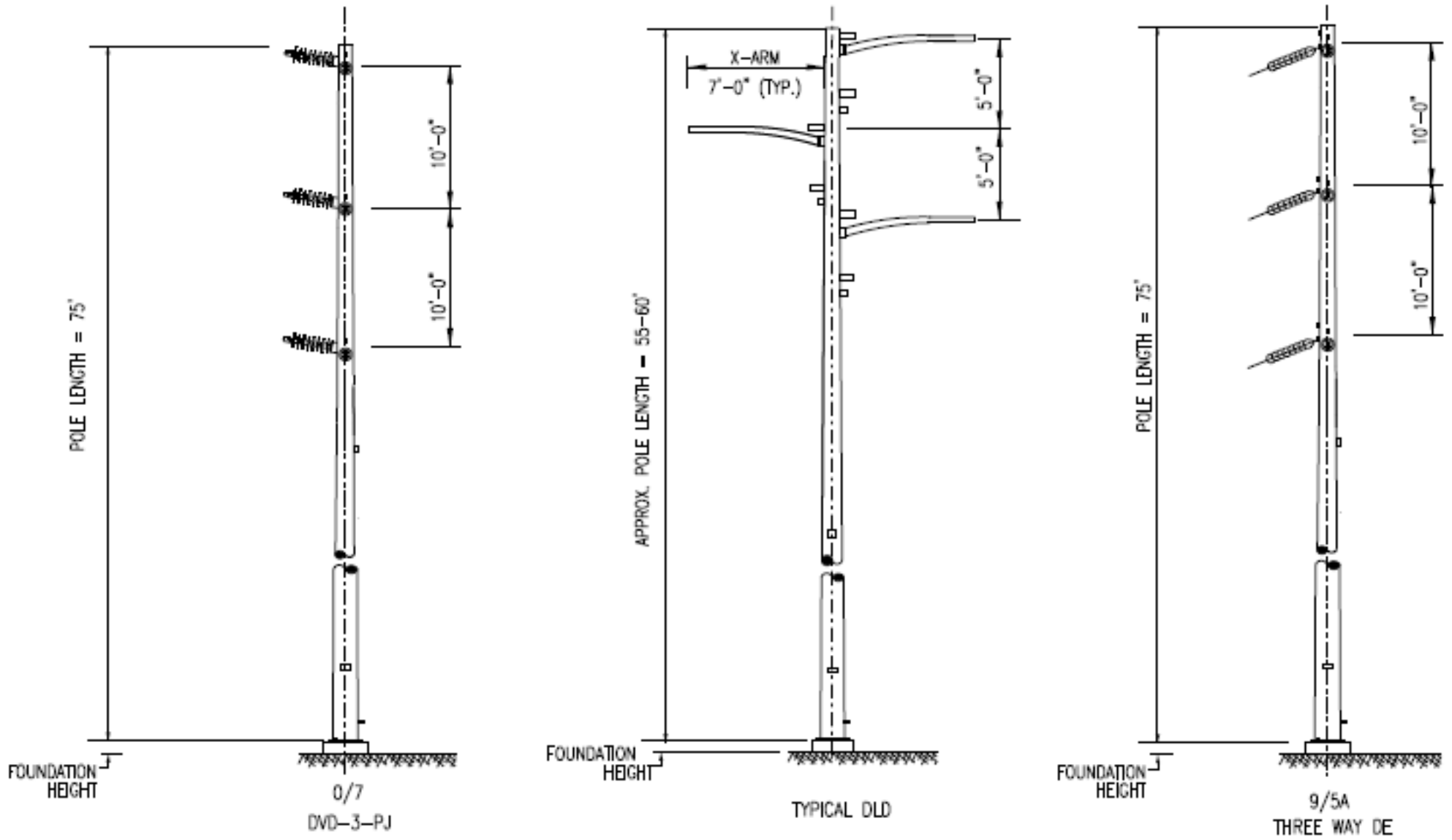


FIGURE 2.0-4
 Typical Tubular Steel Pole
 Fulton-Fitch Mountain Reconductoring Project



NOT TO SCALE

Preliminary and subject to change based on California Public Utilities Commission requirements, final engineering, and other factors.

Temporary wood pole structures may also be required for guard structures at locations where the lines cross roads, recreational trails, or other utility lines. Guard structures typically consist of a pair of temporary vertical wood poles that are direct buried with a horizontal cross-arm or netting. Poles used in guard structures may be guyed for stability. Guard structures will be placed on either side of the road, trail, or electric distribution line as a precaution against falling conductor, and will be removed after the line work is completed.⁴

2.5.3 SUBSTATION MODIFICATIONS

Modifications will be made to substation facilities at Fitch Mountain Substation to handle the higher rated conductor on the Fulton-Hopland Line. These modifications will include replacing two motor switches with two SF₆ circuit breakers, replacing two existing lattice type structures over the circuit breakers with dead-end structures, replacing high-side structures and conductor, upgrading switches with supervisory control and data acquisition (SCADA) systems, and replacing the station's existing 8-foot-long, 8-foot-wide, and 8-foot-tall control building with a new 40-foot-long, 12-foot-wide, and 15-foot-tall control building to accommodate the protection and automation equipment for the circuit breakers. All new substation equipment will match or exceed the reconducted line requirements. All work at the substation will be completed within the existing fence line; the surface of this area has previously been improved and is covered with 95 percent compacted fill. To ensure that any oil leaks from oil-filled equipment would be retained on site, concrete berms will be installed either at the perimeter of the substation, inside the fence line, or in strategic locations closer in proximity to oil-filled equipment. Existing structures are a maximum of approximately 30 feet tall. Replacement dead-end structures will be approximately 36 feet tall, and will be common PG&E dead-end structures used in substations.

2.6 RIGHT-OF-WAY REQUIREMENTS

PG&E currently has easement rights along the entirety of the existing alignment. Within the Fulton-Shiloh segment, the existing easement varies in width from 42 to 82 feet, with the majority of the easement being approximately 80 feet wide. No width is specified for the existing easement of the Shiloh-Fitch segment. PG&E's easement rights include ingress and egress to the power and transmission lines, vegetation removal, pole installation, and reconstruction. PG&E may update or clarify its existing easement rights, as needed, prior to construction.

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

⁴ Staged construction equipment, such as a boom truck, may also serve as a guard structure.

2.7 CONSTRUCTION

2.7.1 STAGING AREAS

Temporary staging areas will be the main base of operations during project construction and will be used for a variety of purposes, including to store construction materials and equipment as they arrive on site, as helicopter landing and refueling zones, for parking of vehicles and equipment, as a meeting area for project management and work crews, and as pull and tension sites. Various existing PG&E industrial facilities and private parcels in the general project area may be used as temporary staging areas, including, but not limited to:

- River Road Park and Ride, located south of Fulton Substation;
- an undeveloped area along the existing alignment on the north side of Shiloh Ridge Road;
- an undeveloped area 200 feet southeast of Brooks Road;
- an undeveloped area approximately 500 feet east of Foothill Regional Park;
- an area at Minaglia Ranch; and
- PG&E facilities, such as Airport Yard, located near the Santa Rosa Airport, and Fulton and Fitch Mountain substations.

Project staging areas range in size from 1 to 5 acres; however, the footprint will vary depending on the area available for use at the time of construction and project needs. The project staging areas are located on generally flat or gently sloping lands. Preparation of staging areas may require placement of geotextile fabric and gravel, but no grading will be required. No electrical service is required for staging areas, and security fencing will not be installed.

2.7.2 WORK AREAS

The following discussion is preliminary and based on typical construction practices and anticipated construction needs. Final design may require modifications to the expected work areas described in the following paragraphs; however, impacts associated with potential project refinements are not anticipated to differ.

2.7.2.1 Pole Work Areas

Pole replacement and removal for the Shiloh-Fulton segment will require an approximately 0.2-acre work area for LDS poles and 0.4-acre work area for TSPs, and two pole work areas in Shiloh Ranch Regional Park where equipment must be carried overland. Pole work areas may require laying of geotextile fabric and gravel, and will be used for equipment and materials storage and vehicle parking. In locations where the terrain is not sufficiently level to stage large equipment (such as excavators), a small pad may be graded using a backhoe attachment on an excavator to establish a safe and level work area. Vegetation removal, tree trimming, and matting of drainage crossings may be required for vehicle access. Pole work areas will be located to minimize impacts on environmentally sensitive areas. Site restoration is not expected to be necessary; however, restoration activities will be conducted in accordance with landowner preferences, as needed.

Construction materials will be delivered by line truck or helicopter and staged near existing structures. Construction vehicles will access work areas using existing, paved dirt and gravel roads and overland travel routes. Construction crews will access work areas by truck, helicopter, or on foot.

2.7.2.2 Guard Structure Work Areas

To prevent conductor from sagging onto other utility lines or roads, approximately 33 temporary guard structures—consisting of either vertical wood poles with cross-arms or staged construction equipment—will be installed or mobilized at crossings of energized electric lines and/or major roadways, including Highway 101, Old Redwood Highway, Shiloh Ridge Road, Chalk Hill Road, and Brooks Road. Guard structures will also be used at trail crossings within county parks, including Shiloh Ranch and Foothill regional parks. A work area up to approximately 0.06 acre in size will be required for each guard structure.

2.7.2.3 Pull Sites

Pull sites are required to install the new conductor onto the TSPs or LDS poles. Approximately 14 pull sites will be located generally in line with the existing power line alignment. Approximately eight pull sites will be located along the Fulton-Shiloh segment, generally at locations where the alignment changes direction. Approximately six additional pull sites will be located along the Shiloh-Fitch segment, approximately one every mile. The exact location of each site will depend on conditions on the ground and will not be determined until just prior to construction. Each pull site will have a footprint of up to approximately 0.6 acre for the Fulton-Shiloh segment and up to approximately 0.8 acre on the Shiloh-Fitch segment. All pull sites located outside of paved areas may require vegetation removal and, potentially, minor blading, grading, and filling to ensure a flat surface and safe work environment. Where appropriate, materials such as fiberglass mats will be laid on the pull sites to minimize ground disturbance. A temporary wood pole will be installed at each pull and tension site to serve as a snub pole during reconductoring.

Pull sites will be used to stage conductor-pulling trucks and conductor reel trucks. Construction vehicles and equipment needed at the pull sites are expected to be parked or staged within the project right-of-way or alongside access roads. Transport vehicles or helicopters will be used to transport personnel and equipment to pull sites.

2.7.2.4 Helicopter Landing Zones

Access for much of the project is difficult due to steep topography and dense vegetation, and the project requires the use of a helicopter to facilitate access to the majority of work areas. Helicopters will be used to remove and deliver poles, materials, equipment, concrete, and workers, and to set poles. Two small helicopters (MD 500 helicopter or similar) will be used to carry humans and materials. A large helicopter (Blackhawk or similar) will be used for flying in new poles and removing old poles. Helicopters will fly directly from the landing zone to the alignment, and will follow the alignment to pole sites. Helicopters may also touch down at locations along the alignment other than landing zones when transporting workers and equipment. At the end of each day, helicopters will return to Santa Rosa Airport or another appropriately equipped facility.

Approximately six landing zones will be used, including two located within project staging areas. Each landing zone requires an area of approximately 1 acre. Any site used as a helicopter landing zone will be maintained with necessary fueling and support equipment for helicopters. Helicopter sites will also be used to facilitate other project activities, such as staging and storing construction materials and equipment, refueling, and assembling construction materials. Site preparation is not expected to be necessary for helicopter landing zones; however, some limited surface blading, grading, and filling may be required to create a stable and level area within the landing zone. Vegetation removal, tree trimming, and matting of drainage crossings may be required for vehicle access to helicopter landing zones.

As detailed in Sections 3.3, Air Quality, 3.8, Hazards and Hazardous Materials, and 3.12, Noise, PG&E best management practices (BMPs) will be implemented at each landing zone to reduce potential impacts related to air quality, hazards and hazardous materials, and noise.

Construction workers using helicopters are required to be certified for helicopter safety, and must produce a certification card to the pilot before they are allowed to fly. Personnel and pilots will attend a daily tailboard meeting at the landing zone that covers safety topics for the day, including the route to be taken and locations to be visited.

2.7.3 ACCESS ROADS

Project work areas will be accessed using a combination of public and private roads, existing unpaved access roads, and overland travel routes that are currently used for operation and maintenance. No new roads will be established for the project, as existing access roads provide access to and/or near most of the existing poles. A width of up to approximately 16 feet will be required for passage of construction vehicles. Most existing dirt and gravel access roads will require vegetation trimming and removal, and several will require improvements consisting of minor grading and placement of gravel to improve traction and all-weather access. Existing gates on access roads may be repaired or replaced, and new gates may be installed on an as-needed basis in coordination with relevant landowners.

Many pole replacement sites will be accessed by overland travel, which is defined as access where there is not a pre-existing road or path, or where access is substantially overgrown, indicating that any pre-existing path is not regularly accessed. Where overland travel is required to access a pole-replacement site, PG&E will identify a route that minimizes the distance traveled and impacts on surrounding vegetation and terrain. Vegetation clearing or mowing may be required to establish overland travel routes.

Road types and approximate mileage anticipated for project use are provided in Table 2.0-1: Access Roads. Access to the Fulton-Shiloh segment will primarily be provided by paved public roads, while access to the Shiloh-Fitch segment will be accomplished using a network of existing paved roads, existing unpaved access roads, and overland travel routes. Minor adjustments to access may be necessary at the time of construction due to land-use changes, unanticipated impacts, and other factors.

Table 2.0-1: Access Roads

Type of Road	Improvements Required	Approximate Width (feet)	Approximate Length (feet)	Total Approximate Area (acres)
Turnarounds (seven)	Minor grading and vegetation removal, and graveling	55	55	0.5
Existing Paved	No improvements will be required	20	8,000	3.7
Existing Unpaved	Vegetation removal	16	60,600	22.3
Improved Unpaved	Minor grading and vegetation removal, and graveling	16	4,000	1.5
Overland travel	Vegetation removal as necessary	16	22,000	8.1
Note: This table is preliminary and subject to change based on CPUC requirements, final engineering, ground conditions at time of construction, and other factors.				

Turnarounds for project vehicles will be established in approximately seven locations along the Shiloh-Fitch segment. Vehicle turnarounds may require minor grading, vegetation removal, and placement of gravel to provide a safe, stable surface for maneuvering.

Access roads cross seasonal watercourses or seasonal wetlands at several locations. To avoid and minimize disturbance to these locations, temporary materials such as fiberglass mats, steel plates, culverts, and/or temporary bridges will be placed across water features during site preparation.

2.7.4 VEGETATION CLEARANCE

Approximately 30 acres of vegetation trimming and tree or shrub removal are anticipated to be required to establish construction work areas, project access, and provide clearance along the reconducted line. Brushing along access roads to establish a width of up to approximately 16 feet will be required to allow vehicle ingress and egress to the project work areas. In work areas, non-woody vegetation will be mowed to reduce the risk of fire hazard, primarily using an all-surface vehicle mower or similar equipment that will allow for subsurface roots and plant materials to remain in place. Pruning and removal of woody vegetation will be required along the margins of pole sites and below the conductor to improve clearances.

Tree work will be performed by hand crews with hand and chain saws, driving line trucks with pull-behind chippers. Where chipper access is available, vegetative materials will be chipped and mulched on site, and used during post-construction restoration, as appropriate. In areas not accessible by a chipper, vegetative debris will be lopped and scattered. No trees within the project area have been officially diagnosed with Sudden Oak Death Syndrome (SODS). PG&E will adhere to its Sudden Oak Death Protocols in any area where there is a possibility of SODS being present.

2.7.5 EROSION AND SEDIMENT CONTROL AND POLLUTION PREVENTION DURING CONSTRUCTION

Construction of the project will require ground-disturbing activities, including vegetation clearing and minor grading associated with access road improvement, pole installation and removal, establishment of work areas, and replacement of the control building at Fitch Mountain Substation. Because these activities will result in disturbance of more than one acre, PG&E will obtain coverage under the State Water Resource Control Board (SWRCB) General Permit for Storm Water Discharges Associated with Construction Activity Order No. 2009-0009-DWQ. To obtain coverage under the permit, PG&E will develop and submit permit registration documents—including a Notice of Intent, Stormwater Pollution Prevention Plan (SWPPP), risk assessment, site map, certification, and annual fee—to the SWRCB prior to initiating construction activities.

PG&E will implement the SWPPP during construction to prevent pollution of nearby drainages with sediment or other polluted runoff related to project construction. The SWPPP will outline implementation of BMPs for each activity that has the potential to degrade surrounding water quality through erosion, sediment runoff, and other pollutants.

2.7.6 CLEANUP AND POST-CONSTRUCTION RESTORATION

Crews will be required to maintain clean work areas as they proceed along the line, and they will be instructed that no debris may be left behind at any stage of the project. Cleanup operations may involve reseeded areas, including temporary workspaces and access roads. Poles and conductors removed from the project will be taken to appropriate disposal facilities to be reused, recycled, or disposed of in accordance with applicable law. PG&E will conduct a final survey to ensure that cleanup activities have been successfully completed. Restoration activities will be conducted as needed and in coordination with landowners.

2.7.7 POWER LINE CONSTRUCTION

2.7.7.1 Conductor Removal

As a safety precaution during conductor removal, guard structures will be placed where the conductor crosses public roads, park trails, or other utility lines to prevent injury or damage if the conductor were to inadvertently fall. The guard structures will vary in design depending on location, but may include installing temporary poles with bracing to support a net, or the use of boom trucks. Any temporary poles required for guard structures will be installed in disturbed roadsides or developed areas.

To remove the existing conductor on the Shiloh-Fitch segment, crews will use a worker lift attached to a line truck to hang string wheels on the cross-arms of each pole. Crews may also need to access mid-span locations to structurally reinforce splices along the existing conductor to avoid its breaking during pulling operations. A sock line will then be hooked onto the conductor, and a puller attached to a line truck will be used to pull the old conductor through the string wheels and wind it onto a collapsible conductor reel attached to a line truck or trailer. The pulling through each structure will be done under a controlled tension to keep the conductor elevated and away from obstacles. These locations may be accessed by truck, helicopter, or foot, depending on site conditions at the time of construction. A helicopter will be used to remove the

sock line, and the reel with old conductor will be transported from the site on a flatbed truck to an authorized recovery center to be reused, recycled, or disposed of in accordance with applicable law.

The conductor on Fitch Mountain #1 Tap is not being replaced. However, because the new TSP at the intersection with the Fulton-Hopland Line eliminates the need for the first pole of the Fitch Mountain #1 Tap, construction crews will remove that pole and replace the second pole on the Fitch Mountain #1 Tap with an LDS pole so that proper line tension can be established. The existing conductor on the Fitch Mountain #1 Tap, which is approximately 650 feet long, will be re-installed in approximately its original alignment between the new TSP and LDS pole, with additional conductor spliced in, as necessary, to adjust the span sway and clearance. Because the TSP is a three-way dead-end structure, PG&E Systems Operations may re-energize the Fitch Mountain #1 Tap after this work is completed so that the tap can provide power from Hopland Substation for project construction and service to area customers during construction.

2.7.7.2 Pole Removal

Following removal of old conductor from the Shiloh-Fitch segment, the existing poles will be removed. Crews will use chainsaws to cut wood poles approximately 6 feet above ground, leaving a stub behind to facilitate full removal using either a hydraulic jack mounted on a utility-terrain vehicle (UTV) or line truck. Existing LDS poles will be removed using a backhoe. Poles will be lifted off site by helicopter to a landing zone, where they will be temporarily staged in contractor bins. Old wood poles will be disposed of at a permitted landfill site, likely Recology Hay Road in Solano County or Forward, Inc. Waste Disposal in San Joaquin County.

One existing pole carrying a 12 kV distribution underbuild and one existing pole carrying a cable and phone underbuild will be shortened rather than removed. In this case, the transmission portion of the poles will be removed and the portion carrying the underbuild will be retained. The poles to be shortened will be accessed by a pole crew with a line truck and trailer or a boom truck. The tops of the poles will be held in place using either the line or boom truck, while the poles are cut with a chainsaw. The tops will then be removed for disposal, leaving the shortened poles to support the underbuild.

2.7.7.3 Pole Installation

Pole installation activities, which will only take place on the Shiloh-Fitch segment, will begin by excavating a hole. For new LDS poles, the holes will measure approximately 3 feet wide and 14 feet deep. For new TSPs, the holes will measure approximately 6 feet wide and 30 feet deep. Excavated soils will be feathered in around the pole site and stabilized. A plastic sleeve will be placed in the hole to prevent cave-in; the plastic sleeve will not be removed prior to pole installation. Plywood and plastic covering will be used to cover the excavated holes until pole installation activities begin.

The holes for LDS poles will be drilled and excavated using a UTV mounted with an auger. The excavator will set up adjacent to the existing pole and the new pole site. Line trucks mounted with augers will be used where poles are located in or adjacent to pull sites, staging areas, existing access roads, developed property, and where there is relatively level, open terrain. A crawler-mounted auger will be used to excavate the wider, deeper holes for the new TSPs.

Pole sites that are not accessible by vehicles due to the absence of access roads and presence of steep terrain will be excavated by hand. Crews and equipment will be transported by helicopter to a nearby clearing, or will access the pole site on foot from the nearest established access road. Equipment will include standard digging tools or portable equipment, as well as a compressor and jackhammer. It may be necessary for crews to establish a small pad for the compressor to make it stable. Crews will use the jackhammer and other portable equipment to excavate a hole for the new pole.

Following soil excavation, new poles and hardware will be delivered to the pole work areas. Most of the replacement LDS poles will be delivered to the site in a Shiflet truck; however, helicopters will be used to deliver LDS poles to those areas that are inaccessible to vehicles. A rigging truck will be used to deliver the TSPs. Poles will be staged in the work area next to the pole it will be replacing. Poles, insulators, and hardware will be assembled in the pole work area.

New LDS poles will be embedded directly in the ground. Each LDS pole will be set using either a helicopter or line truck, and the hole will then be backfilled with crushed rock and compacted.

New TSPs will be set in a concrete-pier foundation approximately 5 feet in diameter and 20 feet in depth, with an above ground height of approximately 18 inches. A line truck will be used to place foundation forms, anchor bolts, and rebar. A cement truck will be used to deliver and pour concrete for the foundation form. Once the concrete has set, the form will be removed and gravel placed around the base. A crane will then be used to install the new TSP on the foundation.

After the poles are set, any additional hardware will be added to the cross-arms using a UTV with a worker-lift attachment.

Pole stubs will be removed using either a portable hydraulic jack or winch line, and the holes will be backfilled. Pole stubs will be taken to a PG&E service yard for disposal at a permitted landfill site.

2.7.7.4 Conductor Installation

Guard structures will be deployed along roadways or at utility crossings prior to installing new conductor to prevent conductor from sagging or falling if it loses tension. Any required snub poles will be installed at pull sites to facilitate tensioning of the line.

Prior to reconductoring, the existing line will be taken out of service. To replace a conductor with a new conductor on the Fulton-Shiloh segment, the existing conductor will first be detached from its support structure and temporarily lifted. Rollers will be installed at the conductor's attachment point, and the conductor will be placed onto the rollers. Installing rollers and detaching the existing conductor typically will require one bucket truck. Crews will access each pole work area by pick-up truck or bucket truck using existing roads. Crews may also need to access mid-span locations to structurally reinforce splices along the existing conductor to avoid its breaking during pulling operations. These locations may be accessed by truck, helicopter, or foot, depending on site conditions at the time of construction.

Once the rollers are in place for a section of line, the existing conductor will be wound onto a reel attached to the puller truck. First, a cable from the puller truck will be attached to the end of the existing conductor, and a pulling rope attached to the tensioner truck on the opposite end. The conductor will then be wound onto the reel, threading the pulling rope onto the rollers. The new conductor will then be fed through the tensioner and attached to the pulling rope. Then the new conductor will be pulled through the rollers until it reaches the puller. Tension will be maintained between the tensioner and puller to keep the conductor elevated and away from obstacles.

PG&E plans to use helicopters to replace the conductor on the Shiloh-Fitch segment. Crews will use a worker lift attached to a line truck to hang stringing wheels on the cross-arms of each pole. A helicopter will be used to pull a sockline through the stringing wheels for each section of the project. The sockline will be attached to the conductor, and a puller truck will pull the conductor back through the stringing wheels. The new conductor will be pulled through each structure under a controlled tension to keep it elevated and away from obstacles, thereby preventing damage to the line and protecting the public. After the conductor has been pulled into place, the sag between the structures will be adjusted to a pre-calculated level using a tensioner attached to a line truck. The conductor will then be attached to the end of each insulator, the stringing wheels will be removed, and vibration dampers and other accessories will be installed.

2.7.7.5 Construction Workforce and Equipment

Project construction will require an excavation crew, helicopter crew, pole crew, line crew, and environmental monitor. Approximately 15 construction workers will be at the project site on a typical work day; however, because work activities may occur concurrently along the project, up to approximately 50 workers may be somewhere on the project site at any time. Crews are expected to be working at adjacent pole sites in a rolling fashion. Staging area and access road construction crews (including vegetation removal crews) will be the first deployed to the site, followed by the pole installation crews and the transmission line crews.

Construction will typically take place between 7 a.m. and 7 p.m. Because construction will progress quickly, construction activities are not expected to take place near any one structure location for more than a few days. Nighttime construction is not anticipated, with the exception of certain construction procedures that cannot be interrupted because of safety considerations, to take advantage of line clearances during off-peak hours, or by landowner request. It is anticipated that construction crews will work concurrently on a rotating schedule of 11 days on and 3 days off.

Equipment typically used during project construction is identified in Table 2.0-2: Typical Construction Equipment and Duration of Use. Table 2.0-2 also describes a breakdown of typical duration of use during construction, including days per week of operation, hours per day of operation, and the total duration of use (in weeks). Table 2.0-3: Anticipated Construction Equipment details the equipment that is planned for use. Not all equipment may be used during all stages of the activity.

Table 2.0-2: Typical Construction Equipment and Duration of Use

Activity	Estimated Quantity of Equipment		Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
Survey	1	pickup truck	4	8	5
Access Road Improvements and Reestablishment	1	ASV mower or similar equipment on rubber tracks	2	4	6
	1	D4 Dozer	4	8	7
	1	pickup truck	4	8	4
	1	semi truck with trailer to haul grader	1	4	4
	1	water truck	4	6	4
Drainage Crossings (includes culverts, “arizona” low-water crossing, and temporary bridges)	1	crawler backhoe	4	4	4
	1	pickup truck	4	4	4
Auger LDS Pole Holes	1	UTV w/ excavator	5	6	6
	1	pickup truck	5	6	6
	1	line truck with auger attachment	5	6	2
Pole Delivery	1	Shiflet truck	4	6	2
LDS Pole Installation – Aerial Access (includes old pole removal)	1	crew-cab truck – transport to walk-in access point	7	4	4
	2	helicopter (small)	7	10	17
	1	helicopter (large)	7	10	9
LDS Pole Installation - Ground Access (includes old pole removal)	1	crew-cab truck	7	6	4
	1	UTV with worker-lift attachment	5	4	6
	1	line truck with trailer	7	6	2

Activity	Estimated Quantity of Equipment		Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
	1	UTV mounted with hydraulic jack	4	6	12
	1	back hoe	5	6	15
	1	jackhammer	4	6	12
	1	compressor	5	4	15
Auger TSP Holes	1	crawler mounted auger	5	6	5
	1	dump truck	5	6	5
TSP Installation (includes pole removal)	1	crane	5	6	6
	1	boom truck	5	6	6
	1	rigging truck (2-ton)	5	6	6
	1	crew-cab truck	7	6	6
	1	pickup truck	7	6	6
	1	cement truck	2	6	3
Material, Equipment, and Supplies Hauled to or from Staging Areas	1	boom truck	7	4	10
	1	F550 truck	5	2	10
Conductor Installation (includes old conductor removal)	3	100 ton cranes	7	5	3
	1	wire reel attached to line truck or trailer	7	7	13
	3	pickup truck	7	7	15
	2	worker lift attached to line truck	7	7	13
	1	puller attached to line truck	7	7	13
	1	tensioner attached to line truck	7	7	13
Right-of-Way Restoration and Cleanup	1	motor grader	5	4	8
	1	D6 dozer	5	4	3
	1	semi truck with trailer	5	2	8
	1	pickup	5	6	8

Activity	Estimated Quantity of Equipment		Estimated Days per Week of Operation	Estimated Hours per Day of Operation	Estimated Duration of Use (weeks)
Circuit Breaker Installation (includes structure and conductor replacement)	1	bobcat	4	10	12
	1	excavator	4	10	12
	1	fork lift	4	10	12
	1	crane	4	10	12
	1	boom truck	4	10	12
	1	man lift	4	10	12

Table 2.0-3: Anticipated Construction Equipment

Equipment	Use
Crane	Lift heavy equipment and materials
ASV mower or similar equipment on rubber tracks	Mowing
Back hoe	Excavation
Bobcat	Excavation
Cement truck	Deliver cement to worksite
Compressor	Operate tools
Crawler (with backhoe, auger)	Install and remove holes and poles
Dozer (D4, D6)	Access road preparation, right-of-way restoration and cleanup
Dump truck	Remove garbage
F550 truck, pickup, crew-cab truck, boom truck	Transport workers, material, equipment, and supplies
Fork lift	Lift materials
Helicopter (large, small)	Transport crew and materials, reconductoring
Jackhammer	Hole and remove holes and poles
Line truck (with auger attachment, trailer, worker lift)	Install and remove holes, poles, and conductor
Man lift	Lift crew members
Motor grader	Grade work areas and access roads
Puller attached to line truck	Install conductor

Equipment	Use
Rigging truck (2-ton)	Install and remove poles
Semi truck with trailer	Transport workers and equipment
Shiflet truck	Deliver TSPs to site
Tensioner attached to line truck	Install conductor
UTV (with hydraulic jack, excavator, worker-lift attachment)	Install and remove holes, poles, and conductor
Water truck	Supress dust
Wire reel attached to line truck or trailer	Haul conductor

2.7.7.6 Construction Schedule

PG&E anticipates that construction of the project will take approximately 1 year to complete. Site development and preparation for both segments is scheduled to begin in July 2018, after which construction will begin immediately. Staging area and access road construction crews will prepare project areas beginning in July, and they will be followed by the pole installation crews, which will remove poles and dig holes. The pole installation crew will work a minimum of 1 month in advance of the reconductoring crew. Construction activities at Fitch Mountain Substation will take approximately 2 months to complete. According to current plans, the Fulton-Hopland Line will be de-energized in October 2018 and re-energized in March 2019. The schedule is preliminary and subject to change.

2.8 OPERATION AND MAINTENANCE

No material changes in maintenance and operation activities are anticipated with implementation of the project.

The existing lines are now and will continue to be inspected annually or as needed when driven by an event, such as an emergency. The current PG&E facility inspection process involves three types of inspections: (1) ground inspections; (2) aerial inspections; and (3) climbing, if ground inspections indicate a need.

Maintenance of the power line is now and will continue to be generally conducted on an as-needed basis, when something is discovered in need of repair during inspections, or in response to an emergency. A benefit of using TSPs and LDS poles for the project is that they generally require less maintenance than wood poles. Moreover, replacement of the Fulton-Hopland and Geysers #12-Fulton conductor should result in less conductor breakage on those lines from corrosion, resulting in fewer events that require emergency response.

2.9 ANTICIPATED PERMITS AND APPROVALS

The CPUC is the lead state agency for the project under the California Environmental Quality Act (CEQA) because a Permit to Construct (PTC) is required in accordance with the CPUC’s General Order No. 131-D Section III.B (GO-131-D). GO-131-D contains the permitting requirements for the construction of transmission and power line facilities. In addition to the PTC, PG&E will obtain all applicable permits for the project from federal, state, and local agencies. Table 2.0-4: Permits and Approvals That May Be Required provides the potential permits and approvals that may be required for project construction.

Table 2.0-4: Permits and Approvals That May Be Required

Regulatory Authority	Agency	Jurisdiction/Purpose	Project Requirements
<i>Federal</i>			
Section 404 Nationwide Permit	U.S. Army Corps of Engineers (USACE)	Work in “waters of the United States,” including wetlands.	For access required across wetlands that result in placement of fill.
Section 7 consultation (through federal review process)	U.S. Fish and Wildlife Service	Potential impacts on federally listed species or critical habitat.	Consultation may be required for California red-legged frog and designated critical habitat for steelhead salmon and California tiger salamander.
Section 106 Consultation (National Historic Preservation Act)	State Historic Preservation Officer (SHPO)	Requires federal agencies to take into account the effects of their undertakings on historic properties.	The USACE may consult with the SHPO due to the presence of historic debris along the project alignment.
Notice of Proposed Construction or Alteration under Federal Aviation Regulations Part 77	Federal Aviation Administration (FAA)	Regulations apply to poles and/or towers over 200 feet in height above ground level at its site, or within certain proximities to local Airports.	Alignment structures within 20,000 feet of Sonoma County Airport require referral to the FAA.
<i>State</i>			
Permit to Construct (GO-131-D)	California Public Utilities Commission (CPUC)	Construction, modification, or alteration of power line facilities.	A Permit to Construct is required under the CPUC’s General Order No. 131-D, Section III.B.
Section 401 Water Quality Certification	Central Coast Regional Water Quality Control Board	Consistency with state water quality standards.	Water Quality Certification will be required prior to obtaining a Section 404 Permit from the USACE, if required.
1600 Streambed Alteration Agreement	California Department of Fish and Wildlife (CDFW)	For work that affects the bed or bank of a stream or lake.	The CDFW may issue a Streambed Alteration Agreement for construction activities that affect wetlands.
2081(b) Incidental Take Permit	CDFW	State-listed species.	Impacts to state-listed species (if required).

Regulatory Authority	Agency	Jurisdiction/Purpose	Project Requirements
Standard Encroachment Permit (discretionary or ministerial)	California Department of Transportation	For use of the California state highways for other than normal transportation purposes, including construction activities completed within the right-of-way.	A standard encroachment permit may be obtained for reconductoring work across Highway 101.
National Pollution Discharge Elimination System Storm Water Permit (ministerial)	State Water Resources Control Board	Construction activities disturbing 1 acre or more of soil must submit a Notice of Intent to comply with the terms of the general permit.	The project will develop and implement a Stormwater Pollution Prevention Plan.
Local			
Encroachment Permit (ministerial)	Sonoma County	For construction activities completed within county road rights-of-way.	Guard structures will be used when reconductoring across roads.
Building Permit (ministerial)	Sonoma County	Ministerial permission to conduct certain building activities	Attachment of replacement substation control building to new foundation.

2.10 APPLICANT-PROPOSED MEASURES

PG&E has incorporated the Applicant-Proposed Measures (APMs) in Table 2.0-5: Applicant-Proposed Measures as part of the project. These measures include PG&E standard construction practices as well as those measures that are proposed to comply with applicable regulations or reduce particular project impacts. These measures will be implemented with the project elements described previously. With these APMs incorporated, no significant impacts will result from construction and operation of this project.

Table 2.0-5: Applicant-Proposed Measures

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
Aesthetics				
AE-1	Construction Cleanup Construction activities will be kept as clean and inconspicuous as practical. Construction debris will be picked up regularly from construction areas.	☒	☒	☒
Air Quality				
AIR-1	Fugitive Dust Emissions Per BAAQMD CEQA guidelines, PG&E will implement the following fugitive dust control measures: <ul style="list-style-type: none"> All exposed surfaces (e.g., parking areas, staging areas, soil piles, graded areas, and unpaved access roads) in active construction areas shall be watered two times per day during dry conditions. All visible mud or dirt track-out onto adjacent public roads shall be removed using wet power vacuum street sweepers or equivalent method 	☒	☒	☒

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
	<p>at least once per day. The use of dry power sweeping is prohibited.</p> <ul style="list-style-type: none"> All vehicle speeds on unpaved roads shall be limited to 15 miles-per-hour. Post a publicly visible sign with the telephone number and person to contact at PG&E regarding dust complaints. This person shall respond and take corrective action within 48 hours. The Air District’s phone number shall also be visible to ensure compliance with applicable regulations. 			
AIR-2	<p>Exhaust Emissions. Per BAAQMD CEQA guidelines, PG&E will implement the following exhaust emission control measures.</p> <ul style="list-style-type: none"> Minimize unnecessary construction vehicle idling time. The ability to limit construction vehicle idling time will depend on the sequence of construction activities and when and where vehicles are needed or staged. Certain vehicles, such as large diesel-powered vehicles, have extended warm-up times following start-up that limit their availability for use following start-up. Where such diesel-powered vehicles are required for repetitive construction tasks, these vehicles may require more idling time. The project will apply a “common sense” approach to vehicle use, so that idling is reduced as far as possible below the maximum of 5 consecutive minutes allowed by California law; if a vehicle is not required for use immediately or continuously for construction activities, its engine will be shut off. Construction foremen will include briefings to crews on vehicle use as part of pre-construction conferences. Those briefings will include discussion of a “common sense” approach to vehicle use. Clear signage shall be provided for construction workers at all access points. All construction equipment will be maintained in accordance with PG&E standards. All equipment shall be checked by a certified visible emissions evaluator. 	☒	☒	☒
Biology				
BIO-1	<p>General Avoidance of Biological Resources Impacts</p> <p>This APM consists of the following components:</p> <ul style="list-style-type: none"> Environmental awareness training. PG&E will conduct environmental awareness training for all construction and on-site personnel prior to the beginning of site work. Training will include a discussion of the avoidance and minimization measures that are being implemented to protect biological resources, as well as the terms and conditions of any Biological Opinion or other permits that apply to the project. Training will include information on the federal and state Endangered Species Acts and the consequences of noncompliance with these acts. Under this program, workers shall be informed about the presence, life history, and habitat requirements of all listed and special-status species with a potential to be affected within the project area. Training will also include information on state and federal laws protecting nesting birds, wetlands, and other water resources, as applicable and appropriate to the project. Biological monitoring to avoid impacts near or in potentially sensitive habitat. A qualified biological monitor will be on site during ground-disturbing construction activities near and within sensitive 	☒	☒	☒

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
	<p>habitat or resources, and will monitor implementation and compliance with APMs relating to the sensitive habitat. The monitor will have the authority to stop work or implement alternative work practices, as determined by PG&E’s biologist in consultation with agencies and construction personnel, as appropriate, if construction activities are likely to impact sensitive biological resources.</p> <ul style="list-style-type: none"> • Marking of sensitive habitat or resource areas. Sensitive habitat or resources—such as active bird nests, burrows that are near suitable aquatic habitat that might support CTS or CRLF, and seasonal wetlands—identified during pre-construction surveys to be within or adjacent to project work areas will be marked or otherwise delineated to ensure that no impacts occur. • Work in California red-legged frog habitat. Construction activities in suitable CRLF habitat will be restricted to the dry season (April 15 through October 15) to the extent feasible. If construction activities must occur within suitable habitat during the wet season, when CRLF may be migrating overland and breeding in the vicinity, a qualified biologist will determine if it is appropriate to fence the perimeter of pull sites, staging areas, and/or landing zones. Fencing will be effective amphibian exclusion fencing. Installation of exclusion fencing will occur under the supervision of a qualified biologist. The amphibian exclusion fencing will remain in place for the duration of construction during the wet season, and will be monitored regularly by environmental inspectors or biologists. Where access is necessary, gates will be installed with the exclusion fence. These measures may be refined slightly to be consistent with measures established during the Section 7 consultation process with USFWS. • Work in California tiger salamander habitat. The project area has very limited potential habitat for CTS in the area surrounding Fulton Substation, and impacts to the species are unlikely. If construction activities must occur during the wet season, a qualified biologist will determine if it is appropriate to fence the perimeter of work areas around Fulton Substation. Fencing will be effective amphibian exclusion fencing. Installation of exclusion fencing will occur under the supervision of a qualified biologist. The amphibian exclusion fencing will remain in place for the duration of construction during the wet season, and will be monitored regularly by environmental inspectors or biologists. Where access is necessary, gates will be installed with the exclusion fence. • Litter and trash management. All food scraps, wrappers, food containers, cans, bottles, and other trash from the project area will be deposited in trash containers and removed from the project site. • Parking. Vehicles and equipment will be parked on pavement, existing roads or road shoulders, developed areas, or approved work areas. • Route and work area limitations. Vehicles will be confined to established or previously disturbed roadways and pre-approved access roads, overland routes, and work areas. Access routes and construction work areas will be limited to the minimum necessary to achieve the project goals. • Maintenance and refueling. All equipment will be maintained to minimize the potential for leaks of automotive fluids such as fuels, 			

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
	<p>solvents, or oils. All refueling and maintenance of vehicles and other construction equipment will be restricted to designated staging areas located at least 100 feet from any down-gradient aquatic habitat, unless otherwise isolated from habitat by secondary containment. Proper spill prevention and cleanup equipment will be maintained in all refueling areas.</p> <ul style="list-style-type: none"> • Pets and firearms. No pets or firearms will be permitted at the project site. • Cover excavations. All excavations in excess of 2 feet deep will be sloped, or have escape ramps installed that are suitable for the escape of wildlife, or be thoroughly covered at the end of the day. All trenches and excavations will be inspected for wildlife at the beginning of the work day and prior to backfilling. If a special-status species is discovered in a trench or excavation area, work in the area will be redirected, and the special-status species will be allowed to leave the trench and the area of its own accord. In the event that any special-status species is trapped in a trench or an excavation and is unable to leave on its own accord, removal will be performed or overseen by a biological monitor with the applicable permits for handling of the species. • Restore temporarily disturbed habitats. All areas that are temporarily disturbed as a result of project activities will be restored upon completion of construction. Disturbed areas will be restored to pre-project conditions or as otherwise requested by the landowner. • Work during the wet season. During wet weather or the rainy season, all open holes, pits, and trenches will be protected to ensure that frogs and salamanders do not become entrapped. Qualified personnel will install protective fencing, coverings, or ramps to either prevent wildlife from falling into excavations or to allow for escape. At the end of each work day, trenches will be covered and/or fenced. Excavations sites will be inspected each morning, prior to the start of construction activities, to ensure that no wildlife are trapped. <p>During the wet season or after a rain event (with greater than 0.1 inches of rainfall), all construction personnel will check underneath vehicles (i.e., tires, tracks, etc.) for the presence of frogs and/or salamanders. Any discovered wildlife will be reported to the on-site biologist or to PG&E environmental staff for relocation assistance.</p> <p>Use Best Management Practices and implement Stormwater Pollution Prevention Plan (SWPPP) measures to minimize erosion and prevent sediment from leaving work areas and entering any aquatic habitat. Do not use monofilament netting with any erosion-control materials.</p>			
BIO-2	<p>Avoid Impacts on Nesting Birds</p> <p>If work is scheduled during the nesting season (February 1 through August 31), nest detection surveys will correspond with a standard buffer for individual species in accordance with the species-specific buffers set forth in Appendix E of the PEA and will occur within 15 days prior to the start of work activities at designated construction areas, staging areas, and landing zones to determine nesting status by a qualified biologist. Nest surveys will be accomplished by ground surveys and/or by helicopter and will support phased construction, with surveys scheduled to be repeated if construction</p>	☒	☒	☒

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
	<p>lapses in a work area for 15 days between March and July. Access for ground surveys will be subject to property access permission. Helicopter flight restrictions for nest detection surveys may be in effect for densely populated residential areas, and will include observance of appropriate established buffers and avoidance of hovering in the vicinity of active nest sites.</p> <p>If active nests containing eggs or young are found, the biologist will establish a species-specific nest buffer, as defined in Appendix E of the PEA. Where feasible, standard buffers will apply, although the biologist may increase or decrease the standard buffers in accordance with the factors set forth in Appendix E. Nesting pair acclimation to disturbance in areas with regularly occurring human activities will be considered when establishing nest buffers. The established buffers will remain in effect until the young have fledged or the nest is no longer active as confirmed by the biologist. Active nests will be periodically monitored until the biologist has determined that the young have fledged or once construction ends. Per the discretion of the biologist, vegetation removal by hand may be allowed within nest buffers or in areas of potential nesting activity. Inactive nests may be removed in accordance with PG&E's approved avian permits. The biologist will have authority to order the cessation of nearby project activities if nesting pairs exhibit signs of disturbance.</p> <p>All references in this APM to biologists refer to qualified biologists with a bachelor's degree or above in a biological science field and demonstrated field expertise in ornithology, in particular, nesting behavior.</p>			
BIO-3	<p>Wetland and Water Feature Protection Measures</p> <p>The following measures will be implemented to avoid and minimize project impacts on wetland and water features:</p> <ul style="list-style-type: none"> • To the maximum extent feasible, design the project to avoid wetland and water features. Where impacts on the features cannot be avoided, coordination may be required with the USACE, USFWS, CDFW, and RWQCB. • Where avoidance is feasible, delineate wetland and water features and establish exclusion zones along the upland margins to restrict entrance by construction personnel and equipment. • Conduct all fueling of vehicles, equipment, and helicopters per APM BIO-1, Maintenance and Refueling. • To the extent feasible, complete any necessary construction activities within or adjacent to wetland or water features during the dry season (October 15 to April 15). For construction activities occurring outside of the dry season, appropriate erosion-control and stormwater protection measures will be implemented as identified in the project SWPPP, if necessary. 	☒	☒	☒
BIO-4	<p>Conduct Pre-Construction Surveys for Special-Status Plants</p> <p>No special-status plants were observed during protocol surveys conducted in 2011 and 2012. Resurvey these areas during the appropriate blooming season prior to construction to confirm that conditions have not changed.</p>	☒	☒	☐

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
BIO-5	<p>Conduct Pre-Construction Surveys for Special-Status Bats</p> <p>If reconductoring occurs between April and September (i.e., bat reproductive season) accessible trees that are 10-inches dbh or greater and rural outbuildings located within 100 feet of pull sites and landing zones that could provide potential bat habitat will be assessed by desktop review and field surveys. Potential bat habitat includes woodpecker holes, exfoliating bark, and branch and bole hollows. If desktop review and field surveys determine that trees and/or outbuildings have low to no potential for roosting habitat, no further action is required. If desktop review or field surveys determine that trees and/or outbuildings have moderate to high potential for roosting habitat, the following procedure will be employed during tree trimming and removal:</p> <ul style="list-style-type: none"> • A qualified biologist will be present for trimming or removal of trees 10 inches or greater dbh. • To the extent feasible, trees/snags/stumps will be cut down on warm days in late morning to afternoon when any bats present are likely to be warm and able to fly. • The qualified biologist will inspect crevices and cavities to the extent possible. If bats may be in a tree bole or branch cavity, the qualified biologist will attempt to expose them and allow escape. For example, if the cavity cannot be investigated by the qualified biologist, then carefully cut successive sections above the cavity to open it, waiting up to 10 minutes in between each cut, and determine if it is empty or allow any bats inside to crawl or fly out. • Create noise and vibration disturbance on the tree (e.g., concussive hitting with equipment and/or chainsaw cutting) for at least 15 minutes before carefully opening up potential crevices and cavities for inspection and clearance. • Remove and set aside any branches that may contain bats. For example, cut the branches off intact and set them upright against trees away from the work activity area to allow any bats present to passively escape. 	☒	☒	☐
BIO-6	<p>Conduct Pre-Construction Surveys for California Red-Legged Frog</p> <p>A qualified biologist shall conduct a pre-construction survey of the work areas with potential habitat for CRLF within 24 hours prior to the start of work. Any areas where frogs are observed will be flagged for avoidance, and clear instructions will be given to all crew members during tailboards of areas to avoid where CRLF may be present.</p>	☒	☒	☐
BIO-7	<p>Conduct Pre-Construction Surveys for California Tiger Salamander</p> <p>A qualified biologist shall conduct a pre-construction survey of the work areas with suitable CTS habitat within 24 hours prior to potential ground disturbance, specifically in the vicinity of Fulton Substation. Burrows will be marked and avoided during construction activities.</p>	☒	☐	☐

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
BIO-8	<p>Conduct Pre-Construction Survey for American Badger</p> <p>A survey for active dens of American badgers shall be performed by a qualified biologist within 30 days prior to construction grading or land clearing. Surveys shall be conducted within suitable habitat. The width of the pre-activity survey will be 250 feet on either side of the construction area or to the extent of PG&E’s right-of-way. Construction may proceed once it is determined that there are no active dens in the survey area. If active dens are present, the dens shall be avoided during the breeding season, and a 50-foot buffer around the den sites shall be established. Smaller buffers may be established through consultation with CDFW.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BIO-9	<p>Conduct Pre-Construction Survey for Western Pond Turtle</p> <p>A survey for western pond turtle shall be performed by a qualified biologist within 24 hours prior to work within riparian or aquatic habitats. Individual western pond turtles, if found in the work area during spring/nesting season, shall be relocated out of harm’s way and outside of the construction area in the direction of travel, or as directed by the CDFW. Similarly, if found during hibernation movements in winter, individual western pond turtles will be relocated outside of the construction area in the direction of travel, or as directed by CDFW.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
BIO-10	<p>Tree Removal and Mitigation</p> <p>Tree removal will be minimized to what is required to implement the project. For removal of large valley oak trees greater than 20-inches dbh or small valley oaks with a cumulative dbh greater than 60 inches that occurs within the Sonoma County Valley Oak Combining District, PG&E will coordinate with landowners to either replace or pay an in-lieu fee to the County valley oak planting program. Any protected trees that are otherwise removed will be documented and replaced at a 1:1 ratio or other measure derived through coordination with Sonoma County or the Town of Windsor that provides an equal level of compensation.</p>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Cultural Resources				
CR-1	<p>Avoid Cultural Resources</p> <p>Impacts on resource P-49-001179 (CA-SON-1256) (which, while not formally evaluated, appears to be potentially eligible for the NRHP and/or CRHR) will be avoided through the development of a protective zone. Prior to construction, a qualified archaeologist will direct this measure to be implemented in a manner that will physically protect the sites (e.g., through the use of signage where necessary).</p> <p>No other resources, including P-49-003449 through P-49-003469, Fulton Substation, Fitch Mountain Substation, FF-1, and FF-2, are considered eligible for listing on the NRHP or CRHR. Therefore, avoidance measures for these resources—such as an environmentally sensitive protective zone—are not necessary.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
CR-2	<p>Stop Work if Previously Unknown Cultural Resources Are Discovered</p> <p>If buried cultural resources—such as chipped or ground stone, historic debris, or building foundations—are inadvertently discovered during site preparation or construction activities, work will stop in that area and within 100 feet of the find until a qualified archaeologist can assess the significance of the find and, if necessary, develop appropriate treatment measures in consultation with PG&E and other appropriate agencies. With the archaeologist’s approval, work may continue on other portions of the site. PG&E will be responsible for ensuring that the archaeologist’s recommendations for treatment are implemented.</p>	☒	☒	☒
CR-3	<p>Stop Work if Human Remains are Discovered</p> <p>In the event human remains are encountered during the project, work in the immediate area of the find will be halted and the PG&E archaeologist and County Coroner will be notified immediately. Work will remain suspended until the Coroner can assess the remains. In the event the remains are determined to be prehistoric in origin, the Coroner will notify the Native American Heritage Commission, who will then identify a Most Likely Descendent. The Most Likely Descendent will consult with PG&E’s archaeologist to determine further treatment of the remains.</p>	☒	☒	☒
PAL-1	<p>Unanticipated Discovery</p> <p>If significant paleontological resources are discovered during construction activities, the following procedures will be followed:</p> <ul style="list-style-type: none"> • Stop work immediately within 100 feet; • Contact the designated project inspector and Cultural Resource Specialist (CRS) immediately; • Protect the site from further impacts, including looting, erosion or other human or natural damage; • The project CRS will arrange for a Principal Paleontologist to evaluate the discovery. If the discovery is determined to be significant, PG&E will implement measures to protect and document the paleontological resource. <p>Work may not resume within 100 feet of the find until approval by the Principal Paleontologist and Cultural Resource Specialist.</p>	☐	☒	☐
PAL-2	<p>Workers Environmental Awareness Training</p> <p>Because high sensitivity formations have been identified within the project area, PG&E (or contractor) will provide environmental awareness training on paleontological resources protection. For this project, the Sonoma Volcanics, Glen Ellen Formation, and older alluvial fan deposits all have high paleontological sensitivities. This training may be administered by the Principal Paleontologist as a stand-alone training or included as part of the overall environmental awareness training as required by the project.</p> <p>The training will include at minimum, the following:</p> <ul style="list-style-type: none"> • Types of fossils that could occur at the project site • Types of lithologies in which the fossils could be preserved • Procedures that should be followed in the event of a fossil discovery • Penalties for disturbing paleontological resources 	☐	☒	☐

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
PAL-3	<p>Monitoring</p> <p>Monitoring will be required for pole hole excavation activities greater than 3 feet in width and grading to depths greater than 2 feet that impact the Sonoma Volcanics, the Glen Ellen Formation, and the older alluvial fan deposits. However, since fossils do not predicatively occur within these formations and the amount of earth disturbance in relatively small, fulltime monitoring is not required, barring the occurrence of an unanticipated, highly-fossiliferous facies. Instead, monitoring will consist of periodic spot checking of grading and augering for pole installation to check for the occurrence of fossils or facies highly likely to produce fossils. In the event that a highly fossiliferous facies is encountered, monitoring shall be fulltime until excavations within that facies are complete.</p> <p>Monitoring will be done by a qualified paleontological monitor. The paleontological monitor will document monitoring activities on monitoring logs. Monitoring logs and reports shall include the activities observed, geology encountered, description of any resources encountered, and measures taken to protect or salvage fossils discovered. Photographs and other supplemental information shall be included as necessary.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
PAL-4	<p>Fossil Recovery</p> <p>In the event that significant paleontological resources are encountered during the project, protection and recovery of those resources may be required. On public lands, treatment and curation of fossils will follow procedures outlined by the land managing agency. On private property, treatment and curation of fossils will be conducted in consultation with the landowner, PG&E, and the CPUC. The Principal Paleontologist will be responsible for developing the recovery strategy and will lead the recovery effort, which will include establishing recovery standards, preparing specimens for identification and preservation, documentation and reporting, and securing a curation agreement from the approved agency. A paleontological monitor or other qualified individual may conduct the recovery of fossil discoveries under the direction of the Principal Paleontologist.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Geology, Soils, Seismic Potential				
GS-1	<p>Minimization of Construction in Soft or Loose Soils</p> <p>Where soft or loose soils are encountered during project construction, appropriate measures will be implemented to avoid, accommodate, replace, or improve such soils. Depending on site-specific conditions and permit requirements, these measures may include:</p> <ul style="list-style-type: none"> • locating construction facilities and operations away from areas of soft and loose soil; • over-excavating soft or loose soils and replacing them with engineered backfill materials; • increasing the density and strength of soft or loose soils through mechanical vibration and/or compaction; • installing material over access roads such as aggregate rock, steel plates, or timber mats; and • treating soft or loose soils in place with binding or cementing agents. 	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
GS-2	<p>Reduction of Slope Instability during Construction</p> <p>Existing natural or temporarily constructed slopes affected by construction will be evaluated for stability by qualified construction staff at the beginning of each construction day that employees may be exposed to the areas immediately upslope or downslope from the area of concern. In developing grading and construction procedures for access roads, the stability of both temporary and permanent cut, fill, and otherwise affected slopes will be analyzed. Construction slopes and grading will be designed to limit the potential for slope instability and minimize the potential for erosion and flooding during construction. During construction, slopes affected by construction activities will be monitored by qualified construction staff and maintained in a stable condition. Construction activities likely to result in slope instability will be suspended, as necessary, during and immediately following periods of heavy precipitation when unstable slopes are more susceptible to failure.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
GS-1	<p>Site-Specific Geotechnical Investigation</p> <p>A geotechnical investigation will be conducted to evaluate the potential for surface fault rupture for poles within and adjacent to potentially active fault traces and earthquake fault zones. Where significant potential for surface fault rupture exists, pole locations will be adjusted, where possible, to minimize any potential for damage based on the conclusions in the report.</p>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Greenhouse Gas Emissions				
GHG-1	<p>Minimize GHG Emissions</p> <ul style="list-style-type: none"> • Minimize unnecessary construction vehicle idling time per APM AIR-2. • Maintain construction equipment per APM AIR-2. • Minimize construction equipment exhaust by using low-emission or electric construction equipment where feasible. Portable diesel fueled construction equipment with engines 50 hp or larger and manufactured in 2000 or later will be registered under the CARB Statewide Portable Equipment Registration Program. • Minimize welding and cutting by using compression of mechanical applications where practical and within standards. • Encourage the recycling of construction waste where feasible. 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
GHG-2	<p>Minimize SF₆ Emissions</p> <ul style="list-style-type: none"> • Incorporate Fitch Mountain Substation into PG&E's system-wide SF₆ emission reduction program. CARB has adopted the Regulation for Reducing Sulfur Hexafluoride Emissions from Gas Insulated Switchgear sections 95350 to 95359, title 17, California Code of Regulations, which requires that company-wide SF₆ emission rate not exceed 1 percent by 2020. Since 1998, PG&E has implemented a programmatic plan to inventory, track, and recycle SF₆ inputs, and inventory and monitor system-wide SF₆ leakage rates to facilitate timely replacement of leaking breakers. PG&E has improved its leak detection procedures and increased awareness of SF₆ issues within the company. X-ray technology is now used to inspect internal circuit breaker components to eliminate dismantling of breakers, reducing SF₆ handling and accidental releases. As an active member of USEPA's SF₆ Emission Reduction 	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
	<p>Partnership for Electrical Power Systems, PG&E has focused on reducing SF₆ emissions from its transmission and distribution operations, and has reduced the SF₆ leak rate by 89 percent and absolute SF₆ emissions by 83 percent.</p> <ul style="list-style-type: none"> • Require that the breakers at Fitch Mountain Substation have a manufacturer’s guaranteed maximum leakage rate of 0.5 percent per year or less for SF₆. • Maintain substation breakers in accordance with PG&E’s maintenance standards. • Comply with California Air Resources Board Early Action Measures as these policies become effective. 			
Hazards and Hazardous Materials				
HM-1	<p>Worker Environmental Training Program</p> <p>An environmental training program will be established to communicate environmental concerns and appropriate work practices to all construction field personnel. The training program will emphasize site-specific physical conditions to improve hazard prevention, and will include a review of the Stormwater Pollution Prevention Plan (SWPPP), which will also address spill response. The worker environmental training program will be provided separately to CPUC staff prior to construction.</p>	☒	☒	☒
HM-2	<p>Fueling of Helicopters</p> <p>Any fueling of helicopters will occur in designated project landing zones, and will comply with the following PG&E guidelines:</p> <ul style="list-style-type: none"> • Any on-site fuel necessary for equipment operation will be placed in appropriate storage tanks on the bed of fueling vehicles. • Bulk lubricating oil, hydraulic fluids, and other materials used for vehicle and equipment maintenance will not be stored on the construction site. • Minor amounts of lubricants and hydraulic fluid will be stored in vehicles. • Secondary containment and spill rags will be used when fueling. • “Topping-off” fuel tanks will be discouraged. • A stockpile of absorbent material will be placed where it will be readily accessible. • All fuel trucks and fueling areas will be required to have spill kits. • Absorbent material will be used on small spills. The absorbent material will be removed promptly and disposed of properly. • Vehicles and equipment will be checked regularly for leaking oils and fuel. 	☒	☒	☐
HM-3	<p>Smoking and Fire Rules</p> <p>Smoking will not be permitted during fire season, except in a barren area that measures a minimum of 10 feet in diameter and is cleared to mineral soil, or within vehicles or enclosed equipment cabs. Under no circumstances will smoking be permitted during fire season while employees are operating light or heavy equipment, or while walking or working in grass and woodlands.</p>	☒	☒	☒

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
HM-4	<p>Carry Emergency Fire Suppression Equipment</p> <p>PG&E construction crew trucks and equipment will have, at a minimum, a standard round-point shovel and a fire extinguisher. If construction activities likely to cause sparks (e.g., welding, grinding, or grading in rocky terrain) are conducted, emergency fire tool boxes will be readily available to crews. The tool boxes will contain fire-fighting items such as shovels, axes, and water.</p>	☒	☒	☒
Hydrology and Water Quality				
WQ-1	<p>Stormwater Pollution Prevention Plan</p> <p>PG&E shall file a notice of intent with the SWRCB and the North Coast RWQCB for coverage under the General Construction Storm Water Permit and shall prepare and implement a SWPPP in accordance with General Order No. 2009-0009-DWQ. Implementation of the SWPPP shall help stabilize disturbed areas and reduce erosion and sedimentation. A monitoring program shall also be established to ensure that the prescribed BMPs are followed during proposed project construction. A qualified SWPPP practitioner shall oversee the implementation of the SWPPP and BMPs.</p> <p>The following measures are generally drawn from that permit and shall be included in the SWPPP prepared for the construction of the proposed project:</p> <ul style="list-style-type: none"> • All Best Management Practices (BMPs) will be on site and ready for installation before the start of construction activities. • BMPs shall be developed to prevent the acceleration of natural erosion and sedimentation rates. • Prior to conducting clearing activities during the wet season and before the onset of winter rains or any anticipated storm events, erosion-control measures shall be installed. Temporary measures such as silt fences or wattles, which are intended to minimize sediment transport from temporarily disturbed areas, shall remain in place until disturbed areas have stabilized. 	☒	☒	☒
WQ-2	<p>Best Management Practices Inspection</p> <p>All BMPs will be inspected on a weekly basis, and at least once every 24-hour period before, during, and after extended storm events. BMPs will be inspected as described in the SWPPP, maintained on a regular basis, and replaced as necessary through the course of construction. For each inspection required, an inspection checklist will be completed using a form as described in Attachment C of General Permit 2009-0009-DWQ. This checklist will remain on site with the SWPPP.</p>	☒	☒	☒
WQ-3	<p>Wetland and Drainage Avoidance</p> <p>To avoid and minimize travel disturbance to wetlands and drainages, temporary materials such as fiberglass mats, steel plates, or temporary bridges will be placed across water features during project access.</p>	☒	☒	☒
WQ-4	<p>Vehicle Maintenance</p> <p>Vehicle maintenance wastes, including used oils and other fluids will be handled and disposed of properly. Fuels and lubricating oils for vehicles and heavy equipment will not be stored or transferred within 100 feet of any waterbodies, unless otherwise isolated from waterbodies by secondary containment.</p>	☒	☒	☒

APM Number	Description	Fulton-Shiloh	Shiloh-Fitch	Fitch Mt. Substation
Recreation				
REC-1	<p>Coordination with Park Management and Signage</p> <p>PG&E will coordinate closely with park management for temporary public land closures during project construction activities. If traditional access is temporarily unavailable, signs advising recreational facility users of construction activities, including directions to alternative trails and/or bikeways, will be posted at entrance gates to parks and open space areas. Signage will be posted at least 1 week in advance of construction, near parks and open space areas.</p>	☒	☒	☐
Transportation and Traffic				
TRA-1	<p>Air Transit and Neighborhood Coordination</p> <p>PG&E will implement the following protocols that pertain to helicopter use during construction and air traffic:</p> <ul style="list-style-type: none"> • PG&E will comply with all applicable FAA regulations regarding air traffic within 2 miles of the project alignment. • PG&E’s helicopter operator will coordinate all project helicopter operations with the local airport before and during project construction. 	☒	☒	☒
TRA-2	<p>Temporary Traffic Controls</p> <p>PG&E will obtain any necessary transportation and/or encroachment permits, including those for the Highway 101 and Old Redwood Highway crossings and transport of oversized loads and certain materials, and will comply with permit requirements designed to prevent excessive congestion or traffic hazards during lane closures. PG&E will develop lane closure/width reduction or traffic diversion plans as required by the encroachment permits. Construction activities that are in, along, or cross local roadways will follow best management practices to minimize impacts to traffic and transportation in the project area.</p>	☒	☒	☒