B. Project Description

B.1 Project Overview

On December 15, 2014, Southern California Edison (SCE) submitted Application No. A.14-12-013 to the California Public Utilities Commission (CPUC) for a Permit to Construct (PTC), as required for the construction and operation of the proposed Valley South 115-kilovolt (kV) Subtransmission Project (VSSP or proposed Project). With the PTC application, SCE also submitted its Proponent's Environmental Assessment (PEA) for the proposed Project.

The VSSP would be located within the cities of Menifee, Murrieta, Temecula, and portions of unincorporated southwestern Riverside County, as shown in Figure A-1 (Project Location and Vicinity, Section A Introduction). The proposed Project includes:

- modification of SCE's existing Valley 500/115-kV Substation (City of Menifee) to equip an existing 115-kV line position and provide protection equipment as required,
- construction of a new approximately 12-mile 115-kV subtransmission line between the Valley Substation and a tubular steel pole (TSP) located at the intersection of Leon Road and Benton Road (Riverside County),
- replacement of approximately 3.4 miles of existing 115-kV conductor from the Leon/Benton Road TSP to an existing TSP (Terminal TSP) located just outside SCE's 115/12-kV Triton Substation (City of Temecula),
- relocation of existing distribution and telecommunication lines to support the installation of the new 115-kV subtransmission line, and
- installation of telecommunications facilities to connect the proposed subtransmission line to SCE's existing telecommunication system.

A detailed description of the proposed Project is provided in the following sections based on the information provided in SCE's PEA, as supplemented by data request responses from SCE.

According to SCE's application, the proposed Project is necessary to add capacity to serve long-term forecasted electrical demand requirements in the Electrical Needs Area (portions of the cities of Menifee, Murrieta, Temecula, and unincorporated Riverside County), to provide safe and reliable electrical service, and maintain or improve system reliability and provide greater operational flexibility within the Electrical Needs Area.

B.2 Project Location

As noted above, the proposed Project is located within cities of Menifee, Murrieta, Temecula, and portions of unincorporated southwestern Riverside County, as shown in Figure A-1 (Project Location and Vicinity). An approximately 15.4-mile 115-kV subtransmission line is proposed between SCE's existing Valley Substation in the City of Menifee to just west of SCE's Triton Substation in the City of Temecula. The subtransmission line would proceed out of the Valley Substation, which is located on Menifee Road immediately south of State Route 74 (SR-74), east along a private SCE access road/farm road, south along Briggs Road, southeast along Case Road to Grand Avenue, before proceeding south along Leon Road to a replacement TSP located on the southeast corner of Leon Road and Benton Road. Along this segment of the proposed Project, referred to as Segment 1, approximately 12 miles of new 115-kV subtransmission line would be installed on a combination of existing and new single-circuit and double-circuit wood poles and lightweight steel (LWS) poles.

Segment 2 begins at the intersection of Leon Road and Benton Road, where approximately 3.4 miles of existing 115-kV conductor would be replaced with new higher capacity 115-kV conductor generally on existing poles. The reconductoring would proceed south along Leon Road, past Murrieta Hot Springs Road, to terminate at a TSP located on the south side of Nicolas Road approximately 0.21 miles west of the Triton Substation in the City of Temecula, herein referred to as the Terminal TSP. The proposed Project would be built within a combination of existing and newly acquired easements and franchise rights-of-way (ROW). SCE may utilize an existing material staging yard in the City of Perris to support construction of the VSSP, among others located along the subtransmission line alignment. The components of the proposed Project are detailed in Section B.3 and shown in Figure B-1 (Subtransmission Line Route).

B.3 Project Components

B.3.1 115-kV Subtransmission Line

B.3.1.1 Segment Descriptions

Segment 1

Segment 1 would consist of a new 115-kV subtransmission line originating at SCE's existing Valley Substation and continuing to a TSP (to be replaced as part of Segment 2, described below) on the southeast corner of Benton Road and Leon Road, as shown in Figure B-1 (Subtransmission Line Route). The new 115-kV line would exit the Valley Substation and proceed approximately 1,600 feet southeasterly on a private SCE access road/farm road between Menifee Road and Briggs Road in a new underground duct bank consisting of three new subtransmission vaults, and new underground 115-kV cables.

The new 115-kV subtransmission line would rise to an overhead position via a riser TSP that would be located on a private road. To accommodate the new 115-kV line, approximately five existing LWS poles and one wood guy stub pole would be removed and replaced with one new riser TSP, four LWS poles, and one wood guy stub pole. Additionally, approximately one mile of existing poles (along a private SCE access road/farm road) from the new riser TSP to the intersection of Briggs Road and McLaughlin Road would be reconfigured to essentially create double-circuit poles by modifying the pole heads. The new 115-kV line would then extend south on Briggs Road to the intersection of Briggs Road and Case Road, which would also require existing pole heads to be reconfigured to a double-circuit configuration to accommodate the new 115-kV line and the installation of two TSPs.

At the intersection of Briggs Road and Case Road, the new 115-kV subtransmission line would continue southeast on the SCE subtransmission facilities for approximately one mile to the intersection of Leon Road and Grand Avenue. To accommodate the new 115-kV line, approximately 27 wood poles and two wood guy stub poles would be removed and replaced with approximately 26 wood poles, one wood guy stub pole, and three TSPs.

The new 115-kV subtransmission line would then continue south approximately nine miles from the intersection of Leon Road and Grand Avenue to the intersection of Benton Road and Leon Road. To accommodate the new single-circuit 115-kV line, approximately 23 TSPs, 8 LWS poles, 215 wood poles, and 19 wood guy stub poles would be installed. Segment 1 of the new 115-kV subtransmission line would be approximately 12 miles in length.

Segment 2

Segment 2 of the proposed Project would involve reconductoring approximately 3.4 miles of existing double-circuit 115-kV subtransmission line. Existing 653 thousand circular mil (kcmil) aluminum conductor steel-reinforced (ACSR) would be replaced with non-specular 954 kcmil stranded aluminum conductor (SAC). Segment 2 would begin at the intersection of Benton Road and Leon Road and continue south on Leon Road to the existing Terminal TSP on the south side of Nicolas Road approximately 0.21 miles west of the Triton Substation in the City of Temecula, as shown in Figure B-1 (Subtransmission Line Route). To accommodate the new 115-kV conductor, approximately one TSP located at the southeast corner of Benton Road and Leon Road, one wood guy stub pole located on the west side of Leon Road at the Allen Road intersection, and two wood poles located approximately 250 feet and 400 feet north of Nicolas Road would be replaced. The transfer of three existing 954 kcmil SAC conductors would be required at structure replacement locations. Additionally, on the north side of Benton Road, approximately 90 feet west of Leon Road, one wood guy stub pole would be installed; on the south side of Benton Road, an existing LWS pole head would be reconfigured from existing back-to-back post insulator construction to double dead-end arm construction (see Figure B-1). Based on preliminary engineering, approximately 81 existing 115-kV subtransmission structures (TSPs, LWS poles, wood poles) would not require replacement as a result of the new 115-kV conductor.

The 115-kV subtransmission structures would support polymer dead end/suspension insulators measuring approximately 48 inches or polymer post insulators measuring approximately 60 to 62 inches, as well as the new 115-kV subtransmission conductor composed of non-specular 954 kcmil SAC. Existing fault return conductor (FRC) would be transferred to the new subtransmission structures or a minimum 4/0 ACSR FRC would be installed as required.

B.3.1.2 115-kV Subtransmission Poles/Towers/Conductor

115-kV Subtransmission Poles/Towers

The subtransmission segments of the proposed Project would utilize wood poles, LWS poles, TSPs, and wood guy stub poles. The approximate dimensions of these structure types are shown in Figures B-2a- B-2d (Typical Subtransmission Structures) and summarized in Table B-1. These structures would be designed consistent with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC, 2006).

Table B-1. Typical Subtransmission Structures to be Installed

Pole Type	Proposed Number of Structures	Approximate Height Above Ground (feet)	Approximate Pole Base Diameter (feet)	Approximate Auger Hole Depth (feet)	Approximate Auger Diameter (feet)
Wood Poles	243	65 to 85	2 to 3	9 to 12	2 to 4
LWS Poles	12	74 to 99	2 to 3	10 to 13	3 to 4
TSP	30	75 to 115	2 to 5	N/A	N/A
TSP Concrete Foundations	30	0 to 4	N/A	20 to 40	5 to 3
Wood Guy Stub Poles	18	38 to 48	1 to 2	6 to 8	1 to 3

Source: SCE, 2014a (PEA Table 3.1); SCE, 2015 (Q#3-1: Wood Guy Stub Poles).

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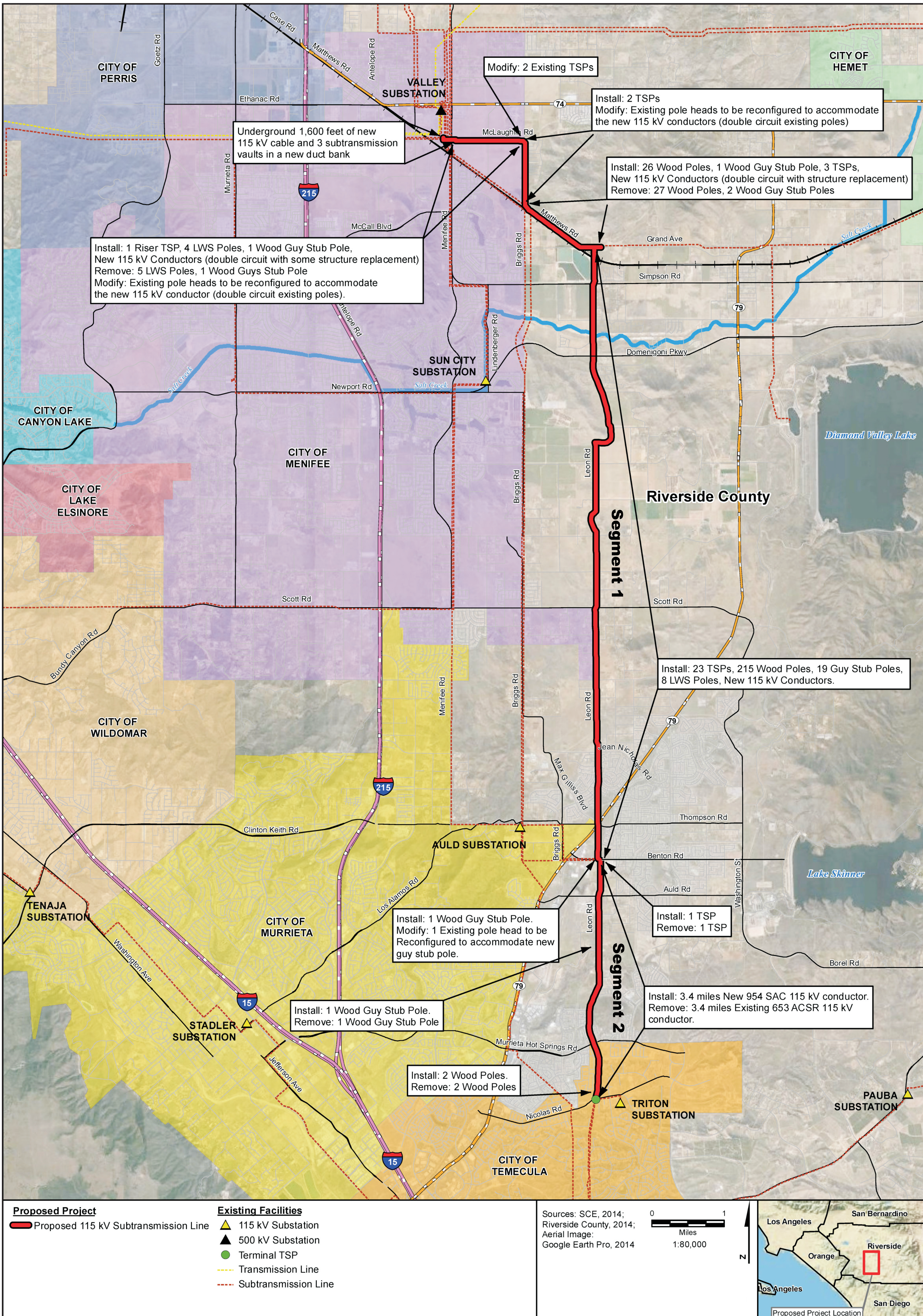
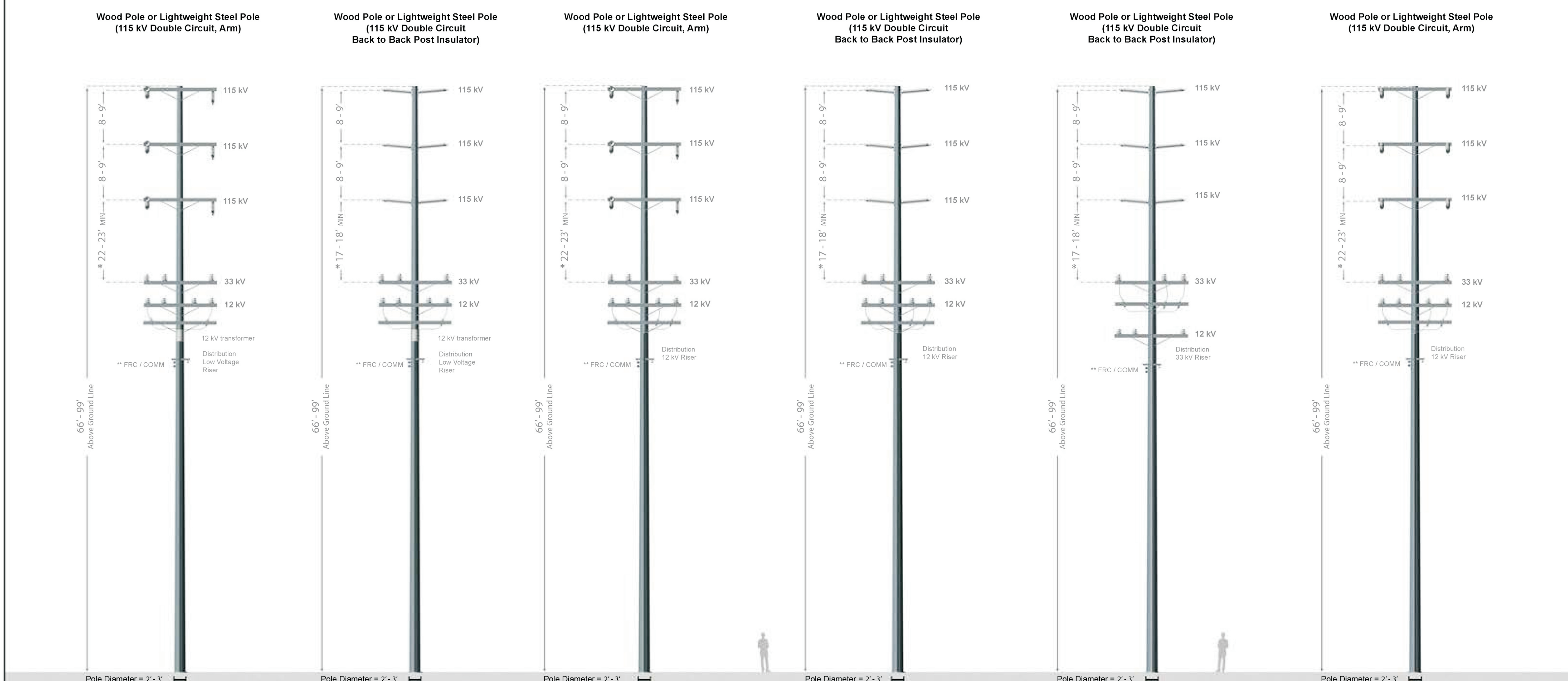


Figure B-1

Subtransmission Line Route

Source: SCE, 2014.



* MIN - Minimum

** FRC on LWS only

FRC - Fault Return Conductor

COMM - Communications

Refer to Table 3.1-C for pole top diameters

This diagram is based on engineering which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction

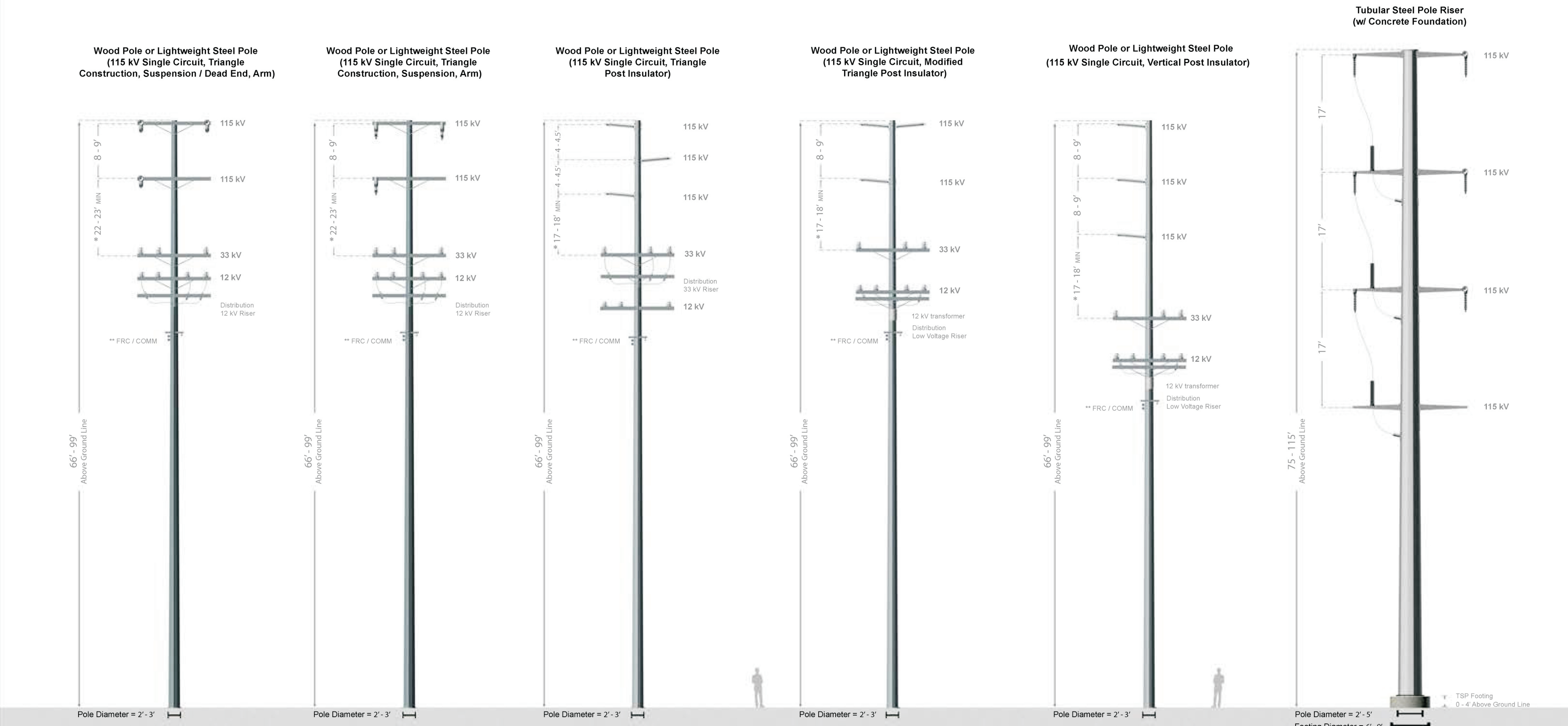
Note:
While the "back to back post insulator" configuration is exactly the same and may appear redundant for several examples, the differences found on each of these poles relates to the lower conductors (i.e., underbuild) on the poles and the various types of equipment or conductors (e.g., transformers, switches, distribution) either existing or planned for the Proposed Project.

For wood poles, LWS poles, and wood guy stub poles the pole top diameters will range from 10 to 16 inches

Source: SCE, 2014.

Figure B-2a

Typical Subtransmission Structures



* MIN - Minimum

** FRC on LWS only

FRC - Fault Return Conductor

COMM - Communications

Refer to Table 3.1-C for pole top diameters

This diagram is based on engineering which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction

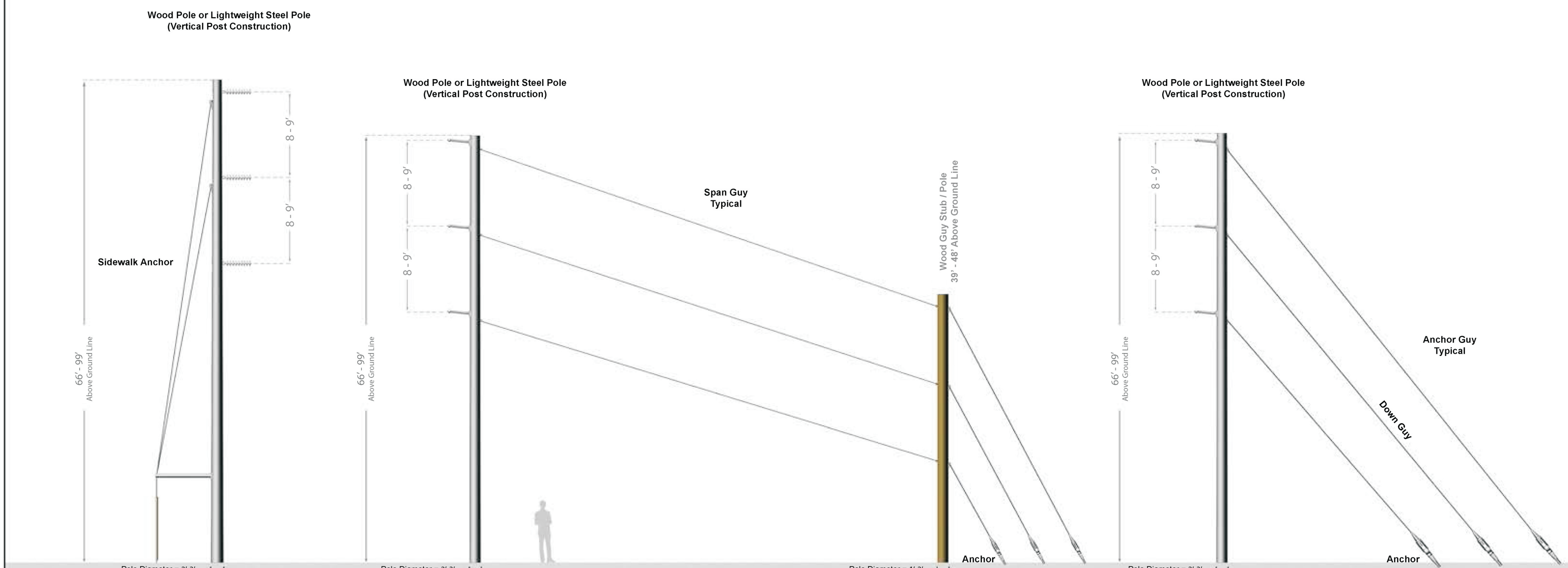
Note:
While the "back to back post insulator" configuration is exactly the same and may appear redundant for several examples, the differences found on each of these poles relates to the lower conductors (i.e., underbuild) on the poles and the various types of equipment or conductors (e.g., transformers, switches, distribution) either existing or planned for the Proposed Project.

For wood poles, LWS poles, and wood guy stub poles the pole top diameters will range from 10 to 16 inches

Source: SCE, 2014.

Figure B-2b

Typical Subtransmission Structures



Drawings on this page not to scale

* MIN - Minimum

** FRC on LWS only

FRC - Fault Return Conductor

COMM - Communications

Refer to Table 3.1-C for pole top diameters

This diagram is based on engineering which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction

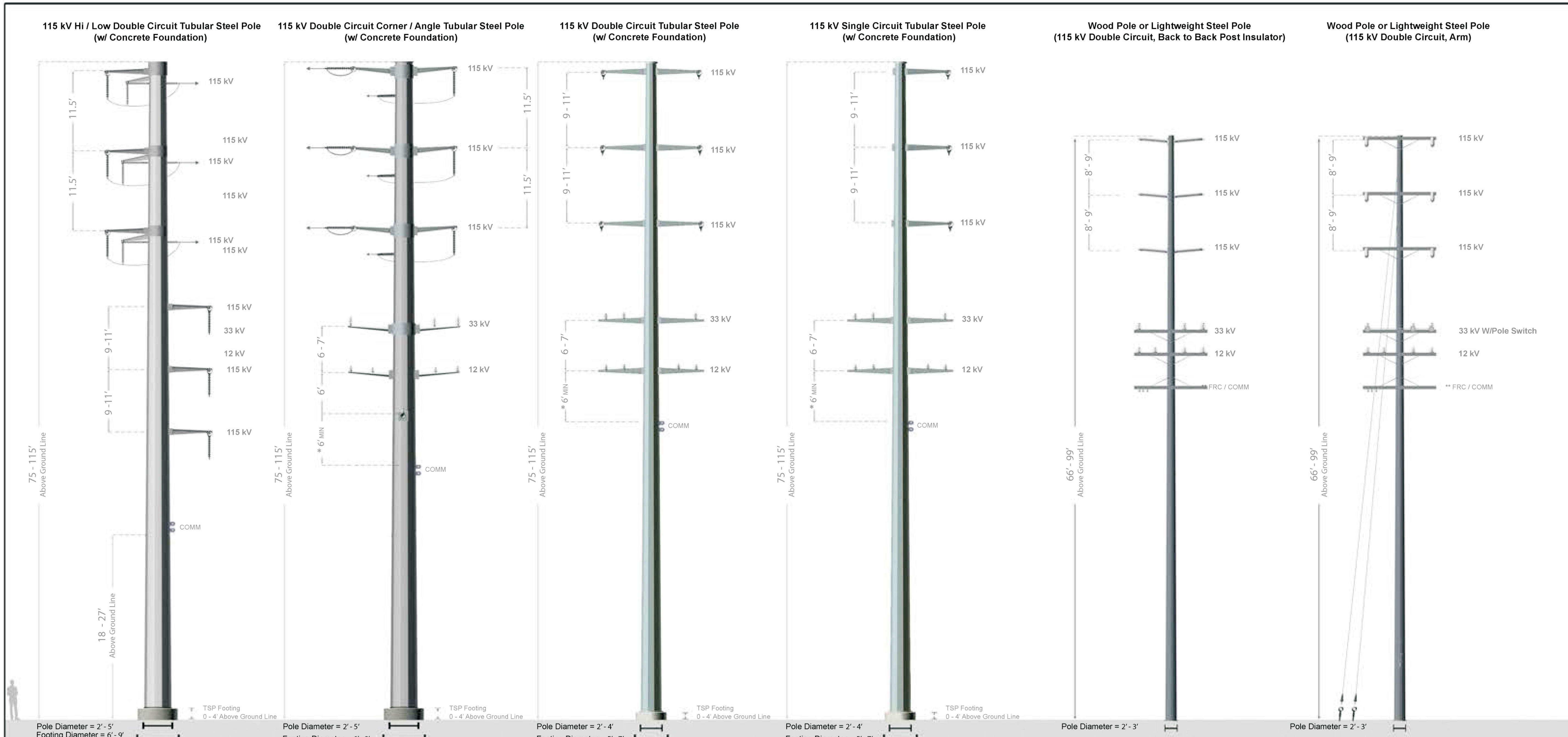
Note:
While the "back to back post insulator" configuration is exactly the same and may appear redundant for several examples, the differences found on each of these poles relates to the lower conductors (i.e., underbuild) on the poles and the various types of equipment or conductors (e.g., transformers, switches, distribution) either existing or planned for the Proposed Project.

For wood poles, LWS poles, and wood guy stub poles the pole top diameters will range from 10 to 16 inches

Source: SCE, 2014.

Figure B-2c

Typical Subtransmission Structures



* MIN - Minimum

** FRC on LWS only

FRC - Fault Return Conductor

COMM - Communications

Refer to Table 3.1-C for pole top diameters

This diagram is based on engineering which is subject to change as a result of the CPUC permit process, final engineering, and any necessary adjustments during construction

Note:
While the "back to back post insulator" configuration is exactly the same and may appear redundant for several examples, the differences found on each of these poles relates to the lower conductors (i.e., underbuild) on the poles and the various types of equipment or conductors (e.g., transformers, switches, distribution) either existing or planned for the Proposed Project.

For wood poles, LWS poles, and wood guy stub poles the pole top diameters will range from 10 to 16 inches

Source: SCE, 2014.

Figure B-2d

Typical Subtransmission Structures

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As shown in Table B-1, approximately 243 wood poles would be required for the proposed Project. Wood poles would be direct-buried to a depth of approximately 9 to 12 feet below the ground surface and extend approximately 65 to 85 feet above the ground. The diameter of the wood poles would be approximately 2 to 3 feet at ground level and would taper to approximately 10-16 inches at the top of the pole (SCE, 2014b, Q#1-14).

Approximately 12 LWS poles would be used for the proposed Project. LWS poles would be direct-buried to a depth of approximately 10 to 13 feet and extend approximately 74 to 99 feet above ground. The diameter of LWS poles would typically be 2 to 3 feet at ground level and would taper to approximately 10-16 inches at the top of the pole (SCE, 2014b, Q#1-14). A FRC would be transferred or upgraded, and installed on the new LWS poles, as required. Where a new FRC is required, a minimum 4/0 ACSR FRC would be installed between the LWS pole spans, and attached to each LWS pole, as shown in Figures B-2a – B-2d (Typical Subtransmission Structures).

Approximately 30 TSPs would be used for the proposed Project. The TSPs would be approximately 2 to 5 feet in diameter at the base and extend approximately 75 feet to 115 feet above ground. The TSPs would be attached to concrete foundations, which would be approximately 5 to 9 feet in diameter and would extend underground approximately 20 to 40 feet, with approximately 0 to 4 feet of concrete visible above ground. Each TSP would use approximately 15 to 95 cubic yards of concrete. The TSPs would be steel structures with a dulled galvanized finish.

Approximately 18 wood guy stub poles would be used for the proposed Project (SCE, 2015, Q#3-1). Wood guy stub poles would be direct buried to a depth of approximately 6 to 8 feet below ground and extend approximately 38 to 48 feet above ground. The diameter of wood guy stub poles would typically be 1 to 2 feet at ground level and would taper to approximately 10-16 inches at the top of the pole (SCE, 2014b, Q#1-14). Where mechanical loads to be imposed on the poles are greater than can be safely supported by the poles, additional strength would be provided by installing guy wires and anchors. Span guy wire would be attached between the line pole and guy stub pole. The down guy wires would be attached to the wood guy stub pole and a 10-foot anchor rod(s) installed in the ground. The impact area associated with an installed anchor rod would be permanent; locations where guy cables and anchor rods are installed would be kept clear of vegetation and include up to a 10-foot radius from where the anchor rod enters the ground (SCE, 2014b, Q#1-8).

To accommodate the underground portion of the 115-kV subtransmission line at the Valley Substation, approximately three 10-foot wide by 20-foot long by 9.5-foot deep precast, concrete, tub-style splice vaults and one approximately 100-foot TSP riser pole would be installed. The underground portion would include a full encasement duct bank, with approximately 1,300 feet located outside the substation fence and 300 feet within the substation fence. Three 115-kV cable terminations would be installed individually on the end of the 3,000-kcmil copper underground cable. The cable terminations would then be connected to the new overhead non-specular 954 SAC conductor at the TSP riser pole. See additional discussion under “Below-Ground Installation” below.

115-kV Subtransmission Conductor/Cable

Existing 115-kV subtransmission structures would be double-circuited with new non-specular 954-kcmil SAC; new 115-kV subtransmission structures would be single-circuit or double-circuit also with new non-specular 954-kcmil SAC. As noted above, a FRC would be transferred or upgraded, and installed on the new subtransmission structures, as required.

The subtransmission conductor is expected to be at least 49 feet above ground as measured at the pole. The vertical distance between conductors installed on poles would be a minimum of eight feet. The horizontal distance between the conductors would be a minimum of 11 feet. A minimum 60 inches would be maintained between the 115-kV conductor and ground wire.

For wood and LWS poles, conductor spans are anticipated to be approximately 80 feet to a maximum of 350 feet. For TSPs, span lengths are anticipated to be approximately 80 feet to a maximum of 600 feet. The actual span lengths would be determined during final engineering.

All conductors installed as part of the proposed Project would be SAC or ACSR (for the FRC). The 954-kcmil SAC would be 1.124 inches in diameter; the 4/0 ACSR would be 0.563 inches in diameter. The existing 653-kcmil ACSR 115-kV conductors, which would be transferred to the new 115-kV structures are 0.953 inches in diameter.

Federal Aviation Administration (FAA) Notifications

The FAA is an agency of the U.S. Department of Transportation which regulates civil aviation activities throughout the U.S., and is responsible for aviation safety and air traffic control, among other areas. Federal Regulation Title 14 Part 77 establishes standards and notification requirements for objects affecting navigable airspace, including structures taller than 200 feet or certain structures located within 20,000 feet (approximately 3.8 miles) of an airport. If structures exceed the regulatory thresholds, the FAA requires notification.

In accordance with FAA procedures, SCE would submit the FAA Form 7460-1 (Notice of Proposed Construction or Alteration) for those subtransmission and telecommunication structures ("structures") and wire spans exceeding the regulatory thresholds, in this case, primarily due to their proximity to French Valley Airport. Approximately 74 poles/towers are anticipated to require FAA notifications. Based on SCE's analysis of the proposed Project, SCE has concluded that these poles/towers are not anticipated to warrant FAA lighting or marker balls; however, the FAA will confirm this approach as part of its own review of the proposed Project (SCE, 2014b, Q#2-1).

Once SCE files the notification forms with the FAA, the FAA will conduct an aeronautical study to determine whether certain structures and wire spans in proximity to public airports would present a potential hazard to air navigation or could negatively impact the operational procedures of a nearby airport. Depending on the determination, the FAA may recommend no changes to the design of the proposed structures; or request redesigning the proposed structures to reduce the height; marking the structure, including the addition of aviation lighting; or placement of marker balls on wire spans (see Figure B-3, Example of Existing Marker Ball). SCE would evaluate the FAA recommendations for reasonableness and feasibility, and in accordance with the Title 14 Part 77, SCE may petition the FAA for a discretionary review of its determination to address any issues with the FAA determinations. FAA agency determinations for permanent structures typically are valid for 18 months, and therefore such notifications would be filed upon completion of final engineering and before construction commences.

If marking is recommended, normally, an orange sphere is placed at each end of a line and the spacing is adjusted (not to exceed 200 feet) to accommodate the rest of the markers. Marker balls would be spaced equally along the wire at intervals of approximately 200 feet or a fraction thereof. Per FAA Advisory Circular AC 70/7460-1K, Obstruction Marking and Lighting (FAA, 2007 – Section 34), if a span requires three or fewer marker balls, then the marker balls on the span would all be aviation orange.

Figure B-3. Example of Existing Marker Ball (Prior to Installation).

If a span requires more than three marker balls, then the marker balls would alternate between aviation orange, white, and yellow. Intervals between markers should be less in critical areas near runway ends (i.e., 30 to 50 feet). They should be displayed on the highest wire or by another means at the same height as the highest wire. Where there is more than one wire at the highest point, the markers may be installed alternately along each wire if the distance between adjacent markers meets the spacing standard. This method allows the weight and wind loading factors to be distributed. Marker balls are typically 36 inches in diameter; however, smaller 20-inch spheres are permitted on less extensive power lines or on power lines below 50 feet above the ground and within 1,500 feet of an airport runway end. Standard marker balls are made of plastic, aluminum, or fiberglass. SCE would select the type of marker ball most suitable for a particular span. Marker balls would be installed on the overhead ground wire, per FAA guidelines.

If aviation lighting is recommended for a proposed subtransmission structure, the following criteria would be taken into consideration:

a. For structures that are 150 feet or shorter, two steady burning red lights at the top of the structure; and
b. For structures over 150 feet tall, three red lights would be considered; one flashing red light at the top, and two steady-burning red lights midway up the structure per FAA Advisory Circular AC 70/7460 1K.

FAA-compliant obstruction lighting may include L-810 lights or L-864 lights. The L-810 light is a steady-burning red light with an approximately 360 degree minimum intensity of 32.5 candela, which would be visible for approximately 1.4 statute miles (1 statute mile = 5,280 linear feet) or approximately 1.0 meteorological visibility statute mile (a.k.a. air mile, where 1 statute mile = 0.87 air mile) (FAA, 2007 – Appendix 2). The L-864 light is a flashing red light with a flash rate of 20 to 40 flashes per minute. It has an approximately 360 degree peak intensity of 2,000 candela, plus or minus 25 percent, which based on FAA guidelines should be visible by aircraft traveling at generally prescribed operating speeds for approximately 3.1 statute miles or approximately 3.0 air miles under general weather conditions (FAA, 2007 – Appendix 2). Both types of lights are expected to use light emitting diodes (LED) instead of incandescent light bulbs to minimize size, weight and power consumption. The L-810 and L-864 lights have focused beacons which direct light upward and outward toward potential aviation traffic without creating illumination of nearby areas directly below the lights. It should be noted that if the biological analysis indicates potential or undetermined impacts to nocturnal birds from the red steady lights, SCE would consult with the FAA to consider appropriate alternatives (i.e., the use of only flashing lights on selected transmission structures for which the FAA has recommended lighting).

Power for the FAA lighting would generally be provided by: (1) installing photovoltaic (solar) panels with a separate control unit to control the power, battery charging, and on-off cycles of the lights, or (2) running a 120/240-volt distribution line to each subtransmission structure requiring lighting. It is anticipated that the majority of structures requiring FAA lighting would utilize photovoltaic solar technology to minimize ground disturbance and associated impacts. Where SCE already has underground vaults or overhead distribution lines directly adjacent to the subtransmission structure, distribution power would be considered. SCE contracts with a lighting system manufacturer for continuous (24/7) monitoring, such that if a light were to malfunction SCE would immediately be notified through email per SCE's contract with the light manufacturer.

In general, aviation lights would be securely attached to each subtransmission structure by metal brackets with the control unit enclosure and the communications system enclosure mounted with a metal bracket separately lower on the transmission structure. The exact placement of these components would vary. Alternatively, based on subtransmission structure characteristics, in certain circumstances the control unit and the communications system enclosures may be located on the ground at the base of the subtransmission structure or at the edge of the ROW. The peripheral hardware, including the battery pack, the control unit enclosure, photovoltaic panels, and the communications system enclosure, may be mounted on one or two ground-based poles approximately 15 to 20 feet tall under or near the subtransmission structure base. If placed on the ground, the peripheral hardware may be surrounded by a chain link fence with top-mounted barbed wire to deter vandals.

Below-Ground Installation

As noted above, the proposed Project includes approximately 1,600 feet of new trench (1,300 feet located outside the Valley Substation fence line and 300 feet within the substation fence line) for the underground portion of the new 115-kV subtransmission line, and associated transition and support structures (i.e., duct bank and vaults). Segment 1 would include a new conventional underground system consisting of three new subtransmission vaults, a new duct bank, and new underground 115-kV single circuit, cross-linked polyethylene, stranded-dielectric, copper cables. The inside dimensions of the underground vaults would be approximately 10-feet wide by 20-feet long, with an approximate height of 9.5 feet (see Figure B-4 for standard vault configuration). The duct bank would be approximately 21-inches high by 17.5-inches wide (see Figure B-5 for standard duct bank configuration).

As trenching for the underground 115-kV subtransmission line is completed, SCE would begin to install the underground duct bank. Collectively, the duct bank would be comprised of cable conduit, spacers, ground wire, and concrete encasement. The duct bank typically consists of six five-inch diameter encased burial polyvinyl chloride (PVC) conduits fully encased with a minimum of three inches of concrete on all sides. Typical 115-kV subtransmission duct bank installations accommodate six cables. The proposed Project would utilize three cable conduits, leaving three spare cable conduits pursuant to SCE's current standards for 115-kV underground construction.

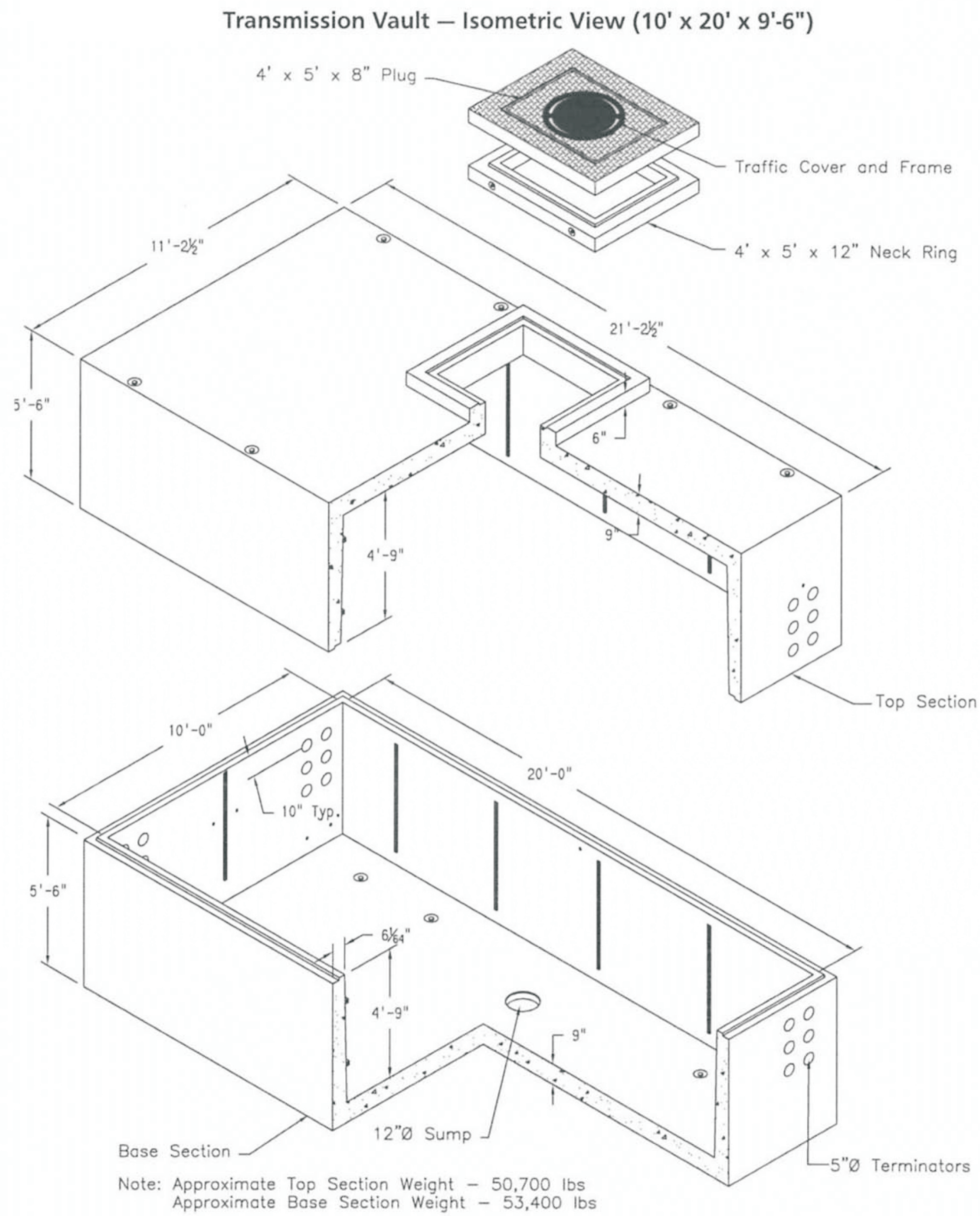
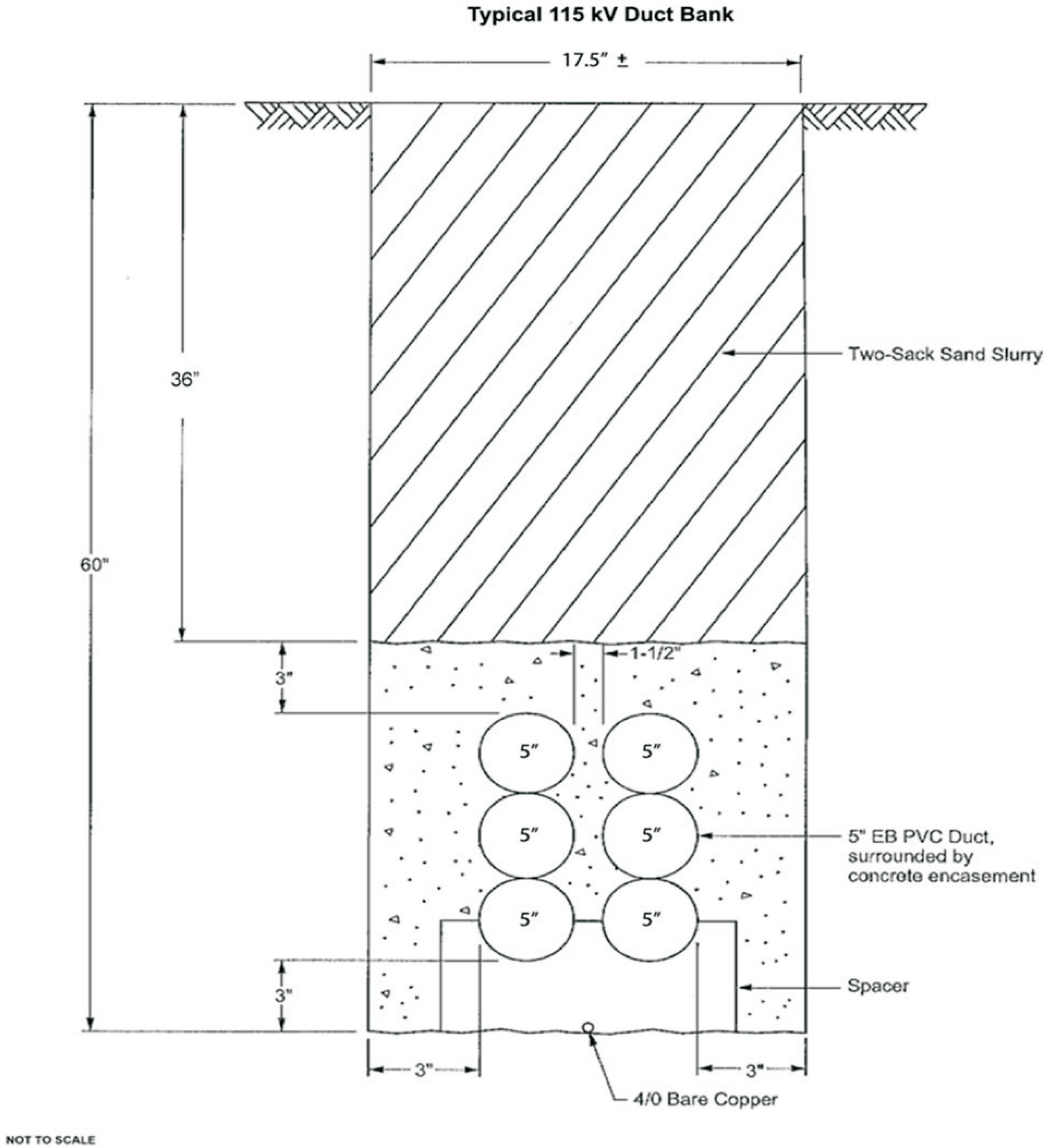


Figure B-4

Source: SCE, 2014.

Typical Subtransmission Vault



Source: SCE, 2014.

Figure B-5

Typical Subtransmission Duct Bank

The majority of the 115-kV duct banks would be installed in a vertically stacked configuration. However, in areas where underground utilities are highly congested or areas where it is necessary to fan out the conduits to reach termination structures, a flat configuration duct bank may be required.

In instances where a subtransmission duct bank would cross or run parallel to other substructures that operate at normal soil temperature (e.g., gas lines, telephone lines, water mains, storm drains, sewer lines), a minimal radial clearance of six inches for crossing and 12 inches for paralleling these substructures would be required, respectively. Where duct banks cross or run parallel to substructures that operate at temperatures substantially exceeding normal soil temperature (e.g., other underground transmission circuits, primary distribution cables, steam lines, heated oil lines), additional radial clearance may be required. Clearances and depths would meet requirements set forth within Rule 41.4 of CPUC General Order (G.O.) 128.

There is no underground work proposed in Segment 2 of the proposed Project.

B.3.2 Telecommunications

Telecommunications infrastructure would be added to connect the proposed Project to SCE's telecommunications system, and provide Supervisory Control and Data Acquisition, data transmission, and telephone services for the proposed Project and associated facilities. Additionally, installation of new telecommunication infrastructure would provide protective relaying services for the new 115-kV subtransmission line.

As part of the proposed Project, existing SCE and third-party telecommunication cables would be transferred to the new 115-kV subtransmission poles installed in Segments 1 and 2. These cables would be attached with wood cross-arms and/or metallic suspension side clamps. No new telecommunication cable would be installed within Segments 1 and 2 of the proposed Project.

Channel equipment would be installed in the existing Mechanical and Electrical Equipment Rooms (MEER) at the Valley and Triton Substations. This equipment interfaces between the relay and the optical transmission equipment, which is also housed in the MEER. All new communication equipment installations at the existing substations would occur within the existing MEER; therefore, no additional ground disturbance is associated with this proposed work.

B.3.3 Distribution

In order to accommodate the proposed 115-kV subtransmission line, some existing 12-kV and 33-kV distribution facilities would need to be modified. Based upon preliminary engineering, the distribution facilities along a private road immediately outside Valley Substation (a.k.a. McLaughlin Road) would need to be adjusted/lowered in elevation to allow for the double-circuiting of the existing Valley-Auld-Triton 115-kV subtransmission line. Additionally, distribution facilities along Leon Road would need to be transferred from the existing poles to the new 115-kV subtransmission line poles. This work includes the installation of new conductor and/or the transferring of existing conductor. All ancillary equipment (e.g., capacitors, switches, transformers, automatic reclosers, services, secondaries, etc.) would also be transferred to the new 115-kV poles. Approximately 230 existing distribution wood poles would be removed along the 115-kV subtransmission route and replaced by the subtransmission poles as part of these activities.

B.3.3.1 Below-Ground Installation

Based upon preliminary engineering, there are approximately 14 locations where overhead to underground transitions (risers) would need to be adjusted within Segment 1. These adjustments would require trenching and the installation of conduits from the point of interception to the new pole locations.

Segment 1 includes a total of approximately 900 feet of new underground distribution lines, and associated transition and support structures. An approximately 20- to 24-inch wide by 46-inch deep trench would be required to place the distribution line underground. This depth is required to meet the minimum 30 inches of cover above the duct bank. Excavated materials would be disposed of at an off-site disposal facility in accordance with all applicable laws. Should groundwater be encountered, it would be pumped into a tank and disposed of at an off-site disposal facility in accordance with all applicable laws.

The underground trench would be widened and shored where appropriate to meet California Occupation and Safety Health Administration (CAL-OSHA) requirements. Trenching would be staged such that open trench lengths would not exceed the minimum necessary to install the duct banks. Where needed to maintain vehicular and pedestrian traffic, steel plates would be placed over open trench sections. Provisions for emergency vehicle access would be arranged with local jurisdictions in advance of construction activities.

B.3.4 Modifications to Existing Substations

In order to accommodate the proposed 115-kV subtransmission line at SCE's existing Valley Substation, the following modifications would be required:

- Equip a position of the existing 115-kV switchrack with two 115-kV circuit breakers, which would each contain an estimated 60 to 90 pounds of sulfur hexafluoride (SF_6), a potent greenhouse gas; four 115-kV group-operated disconnecting switches; one 115-kV potential transformer; three 115-kV lightning arresters; and install a conductor bus using two 1,590-kcmil ACSR conductors. In addition, a 115-kV line getaway exiting the substation would be installed underground.
- Install equipment conduit and grounding for the circuit breakers and disconnect switches, which would include trenching.
- Install six protection relays mounted in two 19-inch relay racks inside the MEER.

Table B-2 provides details on the equipment proposed to be installed at the Valley Substation; these details are subject to final engineering.

Table B-2. New Equipment for Valley Substation

Equipment	Quantity	Function/Use	Typical Dimensions (feet)	Comments
Circuit Breakers	2	Switching of Line	12Lx9Wx17H	---
Disconnect Switches	4	Maintenance of Circuit Breakers	21Lx5Wx14H	---
Transformer	1	Metering	3Lx3Wx14H	---
Lightning Arresters	3	Lightning Protection	4.5Lx2Wx14H	---
Conductor Bus	1	Equipment Interconnection	N/A	1,590-kcmil ACSR
115-kV Line Getaway	1	Connection to Line	N/A	1-1,750 kcmil/Ph Alum (UG)
Equipment Conduits	--	Route for Control Cable	N/A	3" PVC
Equipment Grounding	--	Personnel Safety	N/A	4/0 bare CU
Protection Relays	6	Protect Line & Equipment	N/A	19" Rack-mount

Source: SCE, 2014b (Q#1-45). Protection relays quantity revised to be consistent with PEA description.

B.3.5 Right-of-Way Requirements

The proposed land rights that may need to be acquired and/or amended to implement the proposed Project are as follows:

- **Access** – Access to all proposed Project components would be provided directly from existing public roads or existing SCE access roads, except for one proposed pole located along Leon Road where a new access road would be designed requiring a new easement. For more details on this access road, see Section B.4.3.
- **Subtransmission** – The proposed 115-kV subtransmission line route is currently located within existing easements and public ROWs where SCE holds franchise rights; however, approximately 37 private properties/parcels would require new or upgraded land rights and/or agency permits as required.
- **Distribution** – Any existing distribution lines along the proposed route would be co-located on the same structures and should not require additional land rights.
- **Telecommunications** – Any existing telecom lines along the proposed route would be co-located on the same structures and should not require additional land rights.
- **Construction Support** – Based on final engineering and construction requirements, Temporary Entry Permits and/or leases may be acquired from private land owners to provide sufficient equipment and material storage, staging, and work areas to support the proposed Project.

To construct the proposed Project, SCE would utilize various ROWs, defined as follows (SCE, 2015, Q#3-2):

- Fee – An interest in land, absolute and without limitation to any particular class of heirs.
- Easement – A right held by one property owner to make use of the land of another for a limited purpose, as right of passage.
- New ROW/easement – A land right likely to be acquired by SCE in support of the proposed Project.
- Franchise – A right granted by a government entity to a utility for the benefit of the utility to occupy public ROW, such as roads, streets, sidewalks, etc.

Table B-3 provides an overview of the various land rights that would occur under the proposed Project. Figures B-6a, B-6b, and B-6c (ROW Ownership) illustrate the existing, new, or franchise ROW along the proposed Project alignment.

Table B-3. Right-of Way Requirements for the proposed Project

Land Right	Segment 1 (Miles)	Segment 2 (Miles)	Approximate Width (feet)
SCE fee-owned [1]	0.13	0	To be determined upon final engineering
Existing/Upgraded ROW	5.94	3.3	16 to 55
New ROW/Easement [2]	4.44	0	25 to 30
Franchise [3]	1.89	0.1	To be determined upon final engineering
TOTAL	**12.4**	**3.4**	**--**

Source: SCE, 2015 (Q#3-2).
Notes:
1. The proposed 0.13 miles is contained within SCE fee-owned property at the Valley Substation. Actual width of the proposed facilities would be determined upon final engineering and Project decision.
2. The proposed new ROW/easement widths may vary; widths provided are approximate and may increase or decrease depending upon the parcel, final engineering, and Project decision.
3. The widths associated with franchise areas vary depending on the width of the street; therefore the width is not provided.

As shown in Table B-3, to support the proposed Project 0.13 miles of SCE fee-owned property, 9.2 miles of existing ROW or easement, 2.0 miles of franchise ROW, and 4.4 miles of new or upgraded easements would be required to implement the proposed Project. Easement widths are based on facility types, final design, and type of right to be acquired; therefore, all distances provided are approximates. Upgrading easements may include adding land rights, adding width to existing easements, and improving or clarifying access or maintenance rights.

B.4 Project Construction

The following subsections describe the activities and facilities necessary to support construction of the proposed Project.

B.4.1 Staging Areas

Construction would require the establishment of temporary staging yards, which would be used as a reporting location for workers, vehicle and equipment parking, and material storage. The staging yards may also have construction trailers for supervisory and clerical personnel. Staging yards may be lit for safety and security. Normal maintenance and refueling of construction equipment would also be conducted at these yards. All refueling and storage of fuels would be in accordance with the Storm Water Pollution Prevention Plan (SWPPP).

It is anticipated that one or more (most likely two) of the six locations listed in Table B-4 and shown in Figure B-7 (Proposed Staging Yards) would be utilized as staging yard(s) for the proposed Project (SCE, 2014b, Q#2-10). Each yard would typically be approximately two to five acres in size, depending on land availability and intended use. Staging yard preparation would include temporary chain link perimeter fencing at a height of six feet (SCE, 2014b, Q#1-24), and depending on existing ground conditions at the site, grubbing and/or grading may be required to provide a plane and dense surface for the application of gravel or crushed rock. Slope stabilization issues have not been identified at this time; however, any potential issues would be addressed in the SWPPP at the time of final engineering. Any land that may be disturbed at the staging yard would be returned to pre-construction conditions or left in its modified condition, if requested by the landowner, following completion of construction.

Table B-4. Potential Staging Yard Locations

Yard Name	Location	Condition	Approx. Area (Acres)	Project Component
Subtransmission Material Yard 1	Located in the City of Menifee, southwest corner of Private Road and Menifee Road	Previously Disturbed	2.0	Subtransmission
Subtransmission Material Yard 2	Located in Riverside County, approximately 700 feet west of Van Gaale Lane south side of Benton Road	Previously Disturbed	2.0	Subtransmission
Subtransmission Material Yard 3	Located in the City of Perris, approximately 150 feet north of Case Road, 250 feet east of G Street on Walker Avenue	Previously Disturbed	2.4	Subtransmission
Subtransmission Material Yard 4	Located in the City of Menifee, approximately 350 feet south of Ethanac Road on west side of Antelope Road	Previously Disturbed	4.6	Subtransmission
Distribution Material Yard 5 (Menifee Service Center)	Located in the City of Menifee, on the east side of Menifee Road just south of SR-74.	Previously Disturbed	N/A [1]	Distribution
Substation Material Yard 6 (Valley Substation)	Located in the City of Menifee, on the west side of Menifee Road just south of SR-74.	Previously Disturbed	N/A [1]	Substation

Source: SCE, 2014a (PEA Table 3.2)
Note:
1 Material yard is located at an existing SCE facility, which is currently being used to store materials not associated with the proposed Project. This material yard was included for the purposes of the environmental analysis.

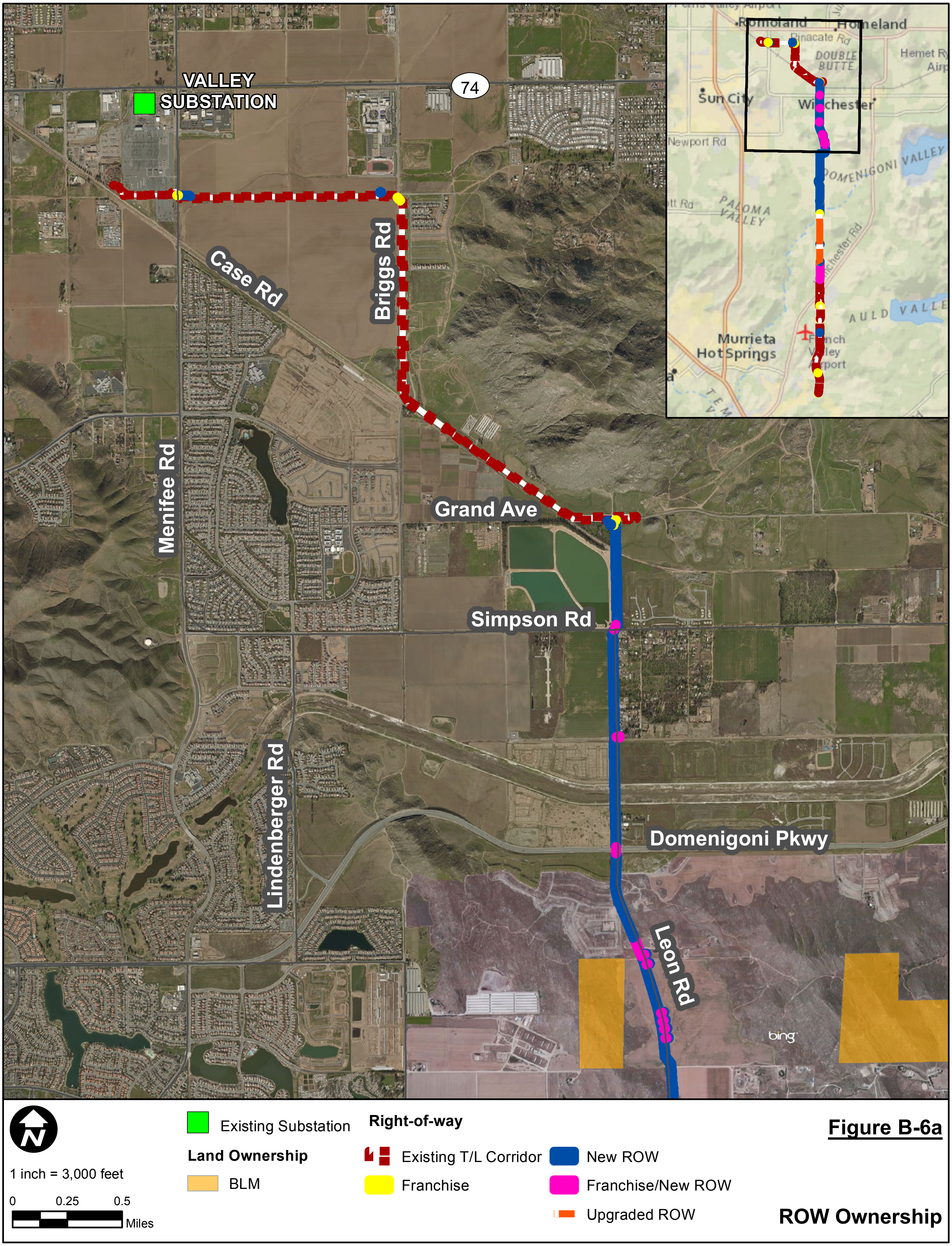


Figure B-6a

ROW Ownership

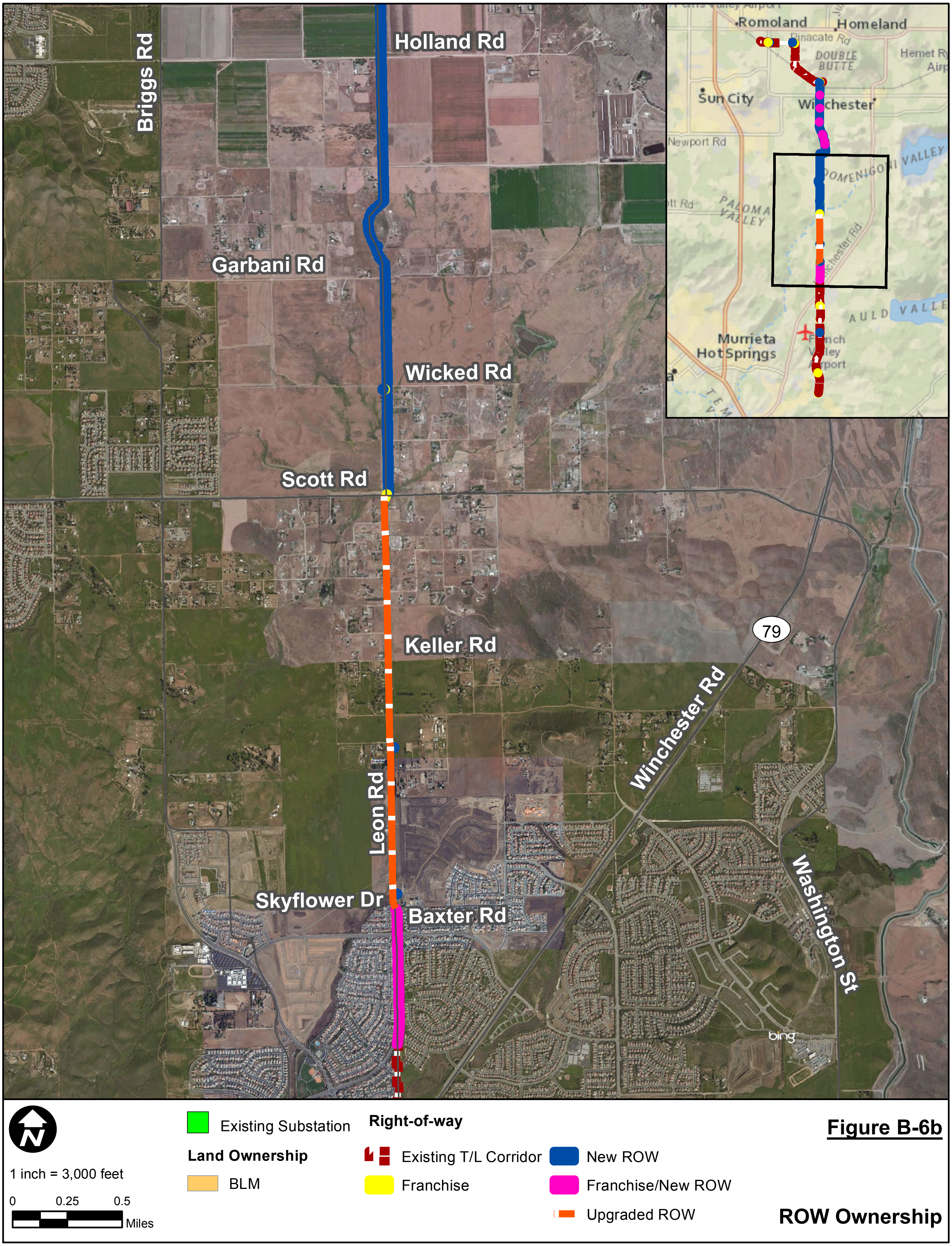
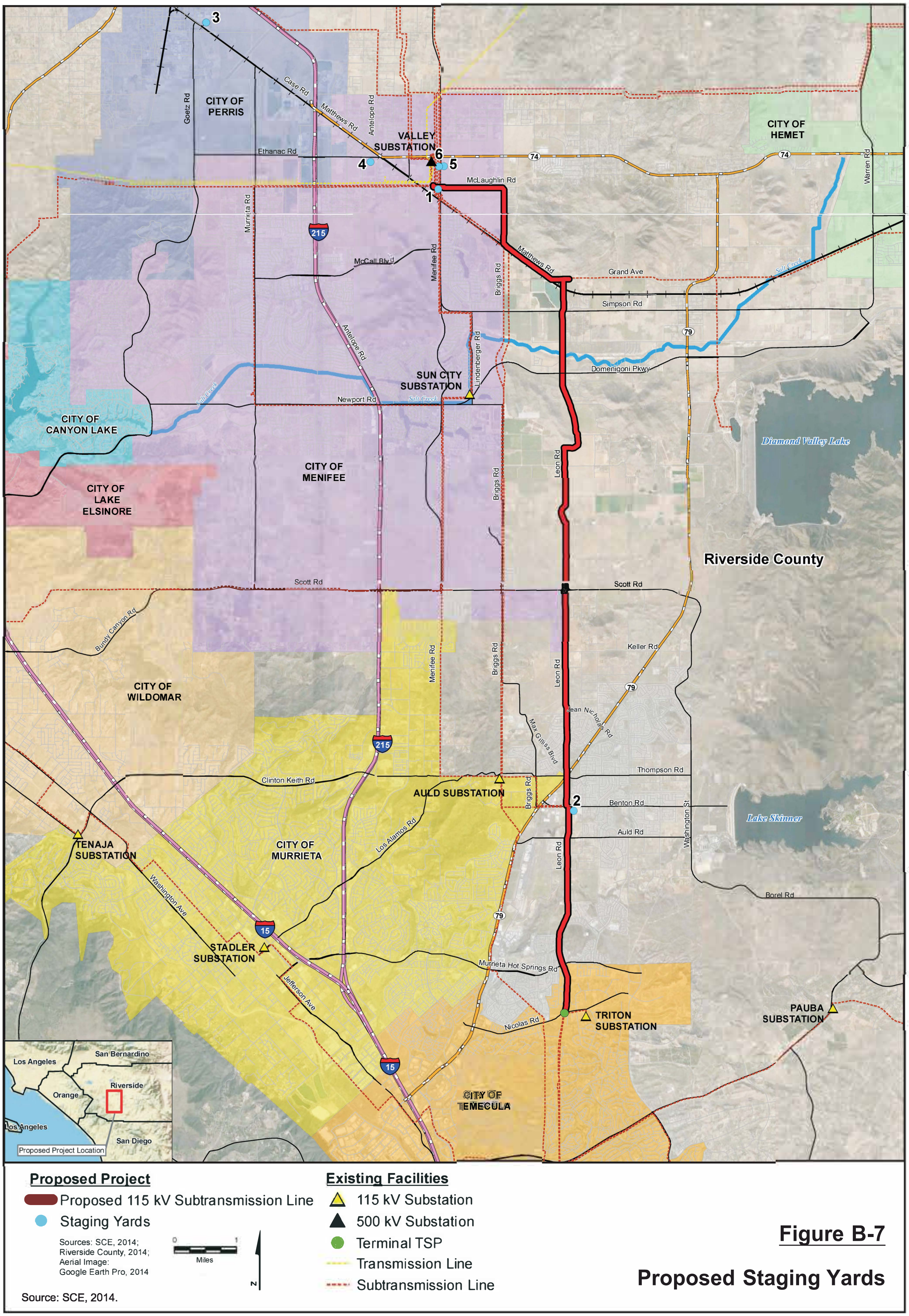


Figure B-6b

ROW Ownership

Figure B-6c

ROW Ownership



Source: SCE, 2014.

Figure B-7

Proposed Staging Yards

Temporary power for the staging yards would be determined based on the type of equipment/facilities being used. If existing distribution facilities are available, a temporary service and meter may be used for electrical power at one or more of the yards. If it is determined that temporary power is not needed or available at the staging yards full time, a portable generator may be intermittently used for electrical power at one or more of the yards.

Materials commonly stored at the substation construction staging area (Material Yard 6 – Valley Substation) would include, but not be limited to, portable sanitation facilities, electrical equipment such as circuit breakers, disconnect switches, lightning arresters, transformers, vacuum switches, steel beams, rebar, foundation cages, conduit, insulators, conductor and cable reels, pull boxes, and line hardware. Materials commonly stored at the subtransmission and distribution construction staging yards (Material Yards 1-5) would include, but not be limited to, construction trailers, construction equipment, portable sanitation facilities, steel bundles, steel/wood poles, conductor reels, overhead ground wire (OHGW) or overhead optical ground wire (OPGW) reels, hardware, insulators, cross arms, signage, consumables (e.g., fuel and filler compound), waste materials for salvaging, recycling, or disposal, and Best Management Practice (BMP) materials (e.g., straw wattles, gravel, and silt fences).

Approximately 25 gallons of fuel would be stored at the site for use by the generator or for power tools. The proposed Project SWPPP(s) would identify locations for storage of hazardous materials during construction as well as BMPs, notifications, and clean-up requirements for incidental spills or other potential releases of hazardous materials.

The majority of materials associated with construction would be delivered by truck to designated staging yards, while some materials may be delivered directly to the temporary subtransmission construction areas described in Section B.4.2 (Work Areas).

B.4.2 Work Areas

Construction work areas serve as temporary working areas for crews and to place Project-related equipment and materials at or near structure locations, within SCE ROW or franchise. Table B-5, identifies the approximate dimensions for the various types of laydown/work areas required to support construction of the proposed Project.

Table B-5. Approximate Laydown/Work Area Dimensions

Laydown/Work Area Feature	Preferred Size (L x W)
Guard Structures	150’ x 75’
TSPs	200’ x 150’
LWS/Wood Poles	150’ x 75’
LWS/Wood Guy Poles	150’ x 75’
LWS Poles (Removal)	150’ x 150’
Wood Poles/Down Guys (Removal)	150’ x 75’
Reconfigure Pole Top	50’ x 50’
Splicing Set Up Area	150’ x 100’
Pull and Tension Area	300’ x 100’
Underground Vaults	100’ x 100’

Source: SCE, 2014a (PEA Table 3.3)

Note: The dimensions listed are preferred for construction efficiency; actual dimensions may vary depending on Project constraints

The new structure pad locations and laydown/work areas would first be graded and/or cleared of vegetation as required to provide a reasonably level and vegetation-free surface. Sites would be graded such that water would run toward the direction of the natural drainage. In addition, drainage would be designed to prevent ponding and erosive water flows that could cause damage to structure footings. The graded area would then be compacted to at least 90-percent relative density, and would be capable of supporting heavy vehicular traffic.

Structure erection may also require establishment of temporary crane pads. Each crane pad would occupy an area of approximately 50 feet by 50 feet, and be located adjacent to each applicable structure generally within the laydown/work area used for structure assembly. The pad may be cleared of vegetation and/or graded as necessary to provide a level surface for crane operation. The decision to use a separate crane pad would be determined during final engineering, as well as the selection of the appropriate construction methods to be used by SCE or its construction contractor.

In extremely steep and rugged terrain, benching may be required to provide access for footing construction, assembly, erection, and wire stringing activities during line construction. Benching is a technique in which an earth-moving vehicle excavates a terraced access to structure locations. Benching would also be used on an as-needed basis in areas to help ensure the safety of personnel during construction activities. SCE has not yet determined whether any specific locations would require benching; further field assessments would be conducted upon final engineering (SCE, 2014b, Q#1-26).

B.4.3 Access Roads and Spur Roads

Subtransmission line roads are classified into two groups; access roads and spur roads. Access roads are through roads that run between structure sites along a ROW and serve as the main transportation route along the line ROWs. Spur roads extend from access roads and terminate at one or more structure sites.

To construct the proposed Project, SCE would utilize a combination of through roads and spur roads accessed from a network of existing paved and unpaved public and private roads. For Segment 1, SCE would also use and maintain one existing permanent unpaved access road, which is approximately 400-feet long and located on the east side of Leon Road starting approximately 300 feet south of Craig Road. Land disturbance associated with this existing access road would amount to approximately 0.2 acres of permanent disturbance (assumes 400-feet long by 18-feet wide; SCE, 2014a – PEA Table 3.4). The rehabilitation of other existing, unpaved SCE (non-public) access roads was not included in the estimate of access land disturbance as existing roads are considered previously disturbed and are maintained on a schedule (or as needed basis). Some brushing, weed mowing, and/or light blading of these roads may be required just prior to construction, depending upon when the existing roads were last rehabilitated under operation and maintenance (O&M) and the level of erosion incurred due to rain storms (SCE, 2014b, Q#1-28). For Segment 2 of the proposed Project, no new access roads are anticipated. SCE would utilize existing access roads for reconductoring work. Access and spur roads used for construction purposes would also be utilized for O&M.

Use of existing unpaved access roads may require some rehabilitation work. Typical construction activities associated with that rehabilitation include vegetation clearing, blade-grading and re-compacting to remove potholes, ruts, and other surface irregularities in order to provide a smooth dense riding surface capable of supporting heavy construction and maintenance equipment. Existing unpaved roads may also require additional upgrades, such as protection for underground utilities and widening if the existing road widths that are too narrow for safe vehicle operation.

Unpaved access roads would have a minimum drivable width of 14 feet, with two feet of shoulder on either side (18 feet total) as determined by the existing land terrain, to accommodate required drainage features. Typically the drivable road width would be widened, generally ranging from an additional 0 to 8 feet along curved sections of the access road, creating up to 26 feet of drivable surface for the access road. Access road gradients would be leveled so that sustained grades generally do not exceed 12 percent. Curves would typically have a minimum radius of curvature of 50 feet, measured from the center line of the drivable road width. Specific site locations may require a wider drivable area to accommodate multi-point turns, where 50 feet minimum radii cannot be achieved.

Table B-6 provides a list of all roads within the general vicinity of the proposed Project that could be used during construction. SCE has stated that the only road that may require some improvements would be the existing 400-foot access road noted above (on the east side of Leon Road near Craig Road), which may require brush/mowing along the edge of the road and light blading to level out the surface. This work is typically performed with handheld weed-whackers or bushing mower. It is not anticipated that the other paved and unpaved roads identified in Table B-6 would require any permanent or temporary improvements. Note that existing unpaved joint-utility use access roads are maintained on an ongoing basis or as needed to rehabilitate or restore the driving surface. (SCE, 2014b, Q#1-27).

Table B-6. Roads in the Project Vicinity

Road Name	Road Surface	Public/Private
Existing permanent 400-foot access road approx. 300 feet south of Craig Rd	Unpaved	Private
Existing access road between Suzi Ln & Nicolas Rd	Unpaved	Private
Existing Access Road Between Borel Rd & Murrieta Hot Springs Rd	Unpaved	Private
Existing Access Road between Benton Rd & Auld Rd	Unpaved	Unknown (May be a dedicated extension of Leon Rd)
Existing 0.20-mile Access Road extending north of Case Rd and parallel to Briggs Rd	Unpaved	Private
'Old' Leon Rd between Benton Rd & approximately 300 feet south of Lantana Way	Paved & Unpaved	Unknown
Menifee Rd	Paved & Unpaved	Public
Ethanac Rd (Highway 74)	Paved	Public
Antelope Rd	Paved	Public
Private Road (SCE Access/Farm Rd)	Unpaved	Private
Case Rd	Unpaved	Public
Briggs Rd	Paved	Public
Mathhews Rd	Paved & Unpaved	Public
Grand Ave	Paved	Public
Leon Rd	Paved & Unpaved	Public
Benton Rd	Paved	Public
Simpson Rd	Paved	Public
Domenigoni Pkwy	Paved	Public
Holland Rd	Paved & Unpaved	Public
Garbani Rd	Paved & Unpaved	Public
Wickerd Rd	Unpaved	Public
Loretta Rd	Unpaved	Public
Scott Rd	Paved	Public
Perrine St	Unpaved	Unknown
Aaron Rd	Unpaved	Unknown
Curzulla Rd	Unpaved	Unknown
Via Las Rosas	Unpaved	Unknown

Table B-6. Roads in the Project Vicinity

Road Name	Road Surface	Public/Private
Clowes Ln	Unpaved	Unknown
La Ray Ln	Unpaved	Unknown
Keller Rd	Unpaved	Unknown
Hilton Rd	Unpaved	Unknown
Flossie Way	Unpaved	Unknown
Baxter Rd	Paved	Public
Jean Nicholas Rd	Paved	Public
Penny Cress Ln	Paved	Public
Winchester Rd (Hwy 79)	Paved	Public
Max Gillis Rd	Paved	Public
Auld Rd	Paved	Public
Van Gaale Ln	Unpaved	Public
Allen St	Unpaved	Public
Jolynn Rd	Unpaved	Public
Borel Rd	Unpaved	Private
Central Park Dr	Paved	Public
Summit Rock Ln	Paved	Public
Bow Bridge Dr	Paved	Public
Murrieta Hot Springs Rd	Paved	Public
Chandler Dr	Paved	Public
Suzi Ln	Paved	Public
Butterfield Stage Rd	Paved	Public
Cantrell Rd	Paved	Public
Calle Chapos	Paved	Public
Calle Girasol	Paved	Public
Nicolas Rd	Paved	Public
S. G St (Perris)	Paved	Public
Commercial St (Perris	Paved	Public

Source: SCE, 2014b (Q#1-27)

B.4.3.1 Access Locations

Access for construction and O&M activities outside of SCE ROW may be required in certain areas until such time that the proposed and/or dedicated public streets are improved to ultimate build out as identified in the Riverside County General Plan Circulation Element (Riverside County, 2008). SCE would work with the corresponding property owner(s) to identify the best route across the unimproved proposed and/or dedicated public streets. These access locations would traverse the proposed and/or dedicated public street ROW along Menifee Road, Briggs Road, Matthews Road, Case Road, Grand Avenue, Leon Road, Old Leon Road (for reference purposes only), Simpson Road, Scott Road, Holland Road, Penny Cress Lane, Thompson Road, Max Gillis Boulevard, Newport Road/Domenigoni Parkway, SR-79/Winchester Road, Benton Road, Antelope Road, Ethanac Road, and SR-74 to gain access to each pole site and/or staging yard. A private road between Menifee and Briggs Roads, which is currently being used as a SCE access road/farm road would also be evaluated when identifying the best route.

Generally, SCE would utilize overland travel from the edge of an existing paved or dirt road for approximately 50 feet to reach each pole site, accounting for approximately 7.7 acres of land disturbance. These temporary access roads to pole sites may require weed/brush mowing and possibly some light blading to level out the surface terrain high and low spots (SCE, 2014b, Q#1-28). Where necessary, ground-disturbance dimensions and activities associated with these access locations would be similar to the dimensions and activities described for the rehabilitation of existing unpaved roads, such as mowing, grubbing, and grade blading. The number of access locations required would be dependent upon final engineering, existing topographical considerations, and availability of suitable terrain providing safe access. These access locations would not be maintained by SCE after construction is completed, but instead would be utilized on an as needed basis only until the public street ROW is completely built out.

Material staging yards shown in Table B-4 have existing drive access from the street. Access to other work areas would be worked out with the property owners prior to construction.

B.4.4 Vegetation Clearance

As noted above in Section B.4.2, the new structure pad locations and laydown/work areas (Table B-5) would first be graded and/or cleared of vegetation as necessary to provide a reasonably level and vegetation-free surface for structure installation. Sites would be graded such that water would run toward the direction of the natural drainage. In addition, drainage would be designed to prevent ponding and erosive water flows that could cause damage to the structure footings. The graded area would be compacted to at least 90 percent relative density, and would be capable of supporting heavy vehicular traffic.

The subtransmission and distribution lines would be maintained in a manner consistent with CPUC G.O. 95 and G.O. 128 as applicable. Vegetation management for O&M is described in Section B.5 (Operation and Maintenance).

Portions of the proposed Project would be located within moderate to very high fire hazard zones. To minimize the potential fire risk during construction and O&M, SCE would implement standard fire prevention protocols and comply with applicable laws and regulations. Prior to construction, contractors would be required to submit a fire prevention plan to SCE construction management for review and approval. Once the fire prevention plan is finalized by SCE, the document would be forwarded to the CPUC. (SCE, 2014b, Q#2-30)

B.4.5 Erosion and Sediment Control and Pollution Prevention

B.4.5.1 Stormwater Pollution Prevention Plan

Construction of the proposed Project would disturb a surface area greater than one acre. Therefore, SCE would be required to obtain coverage under the Statewide Construction General Permit (Order No. 2009-0009-DWQ) from the State Water Resources Control Board (SWRCB). Commonly used BMPs include storm water runoff quality control measures (boundary protection), dewatering procedures, and concrete waste management. The SWPPP would be based on final engineering design and would include all proposed Project components. Inspections would be performed to evaluate and modify BMP implementation as conditions change to ensure compliance with the Construction General Permit and SWPPP (SCE, 2014b, Q#2-31).

B.4.5.2 Dust Control

During construction, migration of fugitive dust from the construction sites would be limited by control measures set forth by the South Coast Air Quality Management District's (SCAQMD) Rule 403, which reduces the amount of particulate matter (PM) entrained in the ambient air as a result of anthropogenic (man-made) fugitive dust sources by requiring actions to prevent, reduce, or mitigate fugitive dust emissions. Actions may include the use of water trucks and other dust control measures, which may include dust suppressants that work by either adhering/binding the surface particles together, or increasing the density of the road surface material. See Section B.6 (Applicant Proposed Measures) for additional proposed measures.

SCE would make reasonable attempts to reduce water use during drought conditions as declared by the State of California. SCE would prepare and submit a Water Efficiency Plan to the CPUC that details the estimated water usage and water efficiency measures that would be implemented as well as the source(s). It is estimated that SCE could use up to approximately 75 to 110 acre-feet of water throughout construction for fugitive dust mitigation, vegetation restoration, and soil compaction activities based on the area of land disturbance, Project duration, seasonal timing of work (i.e., evaporation), type of construction activity, and roadway access/conditions. SCE would attempt to utilize non-potable water or BMPs, when feasible, to reduce the amount of fresh water to be used during construction. (SCE, 2014b, Q#2-33)

B.4.5.3 Hazardous Materials

Construction would require the limited use of hazardous materials, such as fuels, lubricants, and cleaning solvents. All hazardous materials would be stored, handled, and used in accordance with applicable regulations. Material Safety Data Sheets would be made available at the construction site for all crew workers.

B.4.5.4 Reusable, Recyclable, and Waste Material Management

Construction would result in generation of various waste materials, including wood, metal, soil, vegetation, and sanitation waste (portable toilets). Sanitation waste (i.e., human-generated waste) would be disposed of in accordance with applicable sanitation waste management practices. Material from existing infrastructure removed as part of the proposed Project, such as conductor, steel, concrete, and debris, would be temporarily stored in one or more staging yards as the material awaits salvage, recycling, and/or disposal.

Existing wood poles removed under the proposed Project would be returned to a staging yard, and either reused by SCE, returned to the manufacturer, disposed of in a Class I hazardous waste landfill, or disposed of in the lined portion of a Regional Water Quality Control Board (RWQCB) certified municipal landfill.

Excavated material would either be used as fill, backfill for new wood poles, wood guy stub poles, LWS poles, TSP footings, or anchors installed for the proposed Project, made available for use by the landowner, and/or disposed of off-site at an appropriately licensed waste facility. If contaminated material is encountered during excavation, work would stop at that location and SCE's Spill Response Coordinator would be called to the site to make an assessment and notify the proper authorities.

B.4.5.5 Clean up and Post-Construction Restoration

All areas temporarily disturbed by construction, which may include the material staging yard, construction setup areas, stringing sites, and splicing sites, would be cleaned up and restored to as close to pre-construction conditions as feasible, or to the conditions agreed upon between the landowner and SCE following the completion of construction. A post-construction restoration plan would be provided by SCE when construction is nearing completion. Until construction is nearing completion, the levels of clean up and restoration efforts that may be required are unknown.

If restoration or revegetation were to occur within sensitive habitats, a habitat restoration and/or revegetation plan(s) would be developed by SCE with the appropriate resource agencies, and implemented after construction is complete.

B.4.6 Subtransmission Line Construction (Above Ground)

The following components support the above-ground construction activities associated with installing the proposed 115-kV subtransmission line.

B.4.6.1 Pull and Tension Sites

The pulling, tensioning, and splicing set-up locations associated with the proposed Project would be temporary, and the land would be restored to its previous condition following completion of pulling and splicing activities. The set-up locations require level areas to allow for maneuvering of the construction equipment and, when possible, these locations would be located on existing roads and level areas to minimize the need for grading and cleanup. Approximately 40 set-up locations are currently proposed, as shown in Figure B-8 (Proposed Pull and Tension Sites, Splicing Sites, and Guard Structures); however, the final number and location of these sites would be determined upon final engineering. The approximate area needed for stringing set-ups associated with wire installation is variable and depends upon terrain. Table B-5 provides the approximate size of pulling, tensioning, and splicing equipment set-up areas.

Wire pulls are the length of any given continuous wire installation process between two selected points along a line. Wire pulls are selected based on a variety of factors, including availability of dead-end structures, conductor size, geometry of the line as affected by points of inflection, terrain, and suitability of stringing and splicing equipment set-up locations. On relatively straight alignments (flat terrain), typical wire pulls occur approximately every 6,000 feet. When the line route alignment contains multiple deflections or is situated in rugged terrain, the length of the wire pull is typically diminished. Generally, pulling locations and equipment set-ups would be in direct line with the direction of the overhead conductors and established at a distance equal to approximately three times the height of the adjacent structure.

Each stringing operation consists of a puller set-up positioned at one end, and a tensioner set-up with wire reel stand truck positioned at the other end of the wire pull. Pulling and wire tensioning locations may also be utilized for splicing and field snubbing of the conductors. Temporary splices, if required, may be necessary since permanent splices that join the conductor together cannot travel through the rollers. Splicing set-up locations are used to remove temporary pulling splices and install permanent splices once the conductor is strung through the rollers located on each structure. Field snubs (i.e., anchoring and dead-end hardware) would be temporarily installed to sag conductor wire to the correct tension at locations where stringing equipment cannot be positioned in back of a dead-end structure.

B.4.6.2 Pole Removal

Pole installation and removal would require the use of a variety of equipment as discussed in Section B.4.11; all construction vehicles and equipment would be moved to pole installation or removal sites overland using the existing subtransmission access road network and spur roads.

Pole and Foundation Removal

The proposed Project would involve removing structures, conductor, and associated hardware. The following work is proposed in the sequence below:

- Road work – Existing access roads would be used to reach structures; however, some rehabilitation and grading may be necessary before removal activities would begin (e.g. to establish temporary crane pads for structure removal).
- Wire-pulling locations – Wire pulling sites would be located approximately every 6,000 feet along the subtransmission corridor, and would include locations at dead-end structures and turning points.

- Conductor removal – Upon placement of the wire pulling equipment, the subtransmission conductor would be pulled out with a pulling rope and/or cable attached to the trailing end of the conductor; guard structures or the equivalent may be used during the removal process. The old conductor would be transported to a construction yard where it would be prepared for recycling
- Structure removal – Most structure removal activities would use the previously disturbed areas established for original structure installation. If previously disturbed areas adjacent to the structure are not available, an area would be cleared of vegetation and graded, if the ground is not level. For TSPs, structures would be dismantled down to the foundations, and the materials would be transported to a construction yard where it would be prepared for recycling. For wood and LWS poles, which are installed without foundations, removal would include disconnecting conductors from insulators, removing insulators, and cross arms. The soil surrounding the pole site would be partially excavated to loosen the pole and a boom truck would be used to pull the pole (including the subsurface portion) out of the ground. Depending on the condition of each pole site prior to construction, some surface restoration may be required. (SCE, 2014b, Q#1-21)
- Footing/Foundation removal – Concrete footings (TSPs) would be removed to a point one to two feet below grade; holes would be filled with excess soil and smoothed to match the surrounding grade. Footing materials would be transported to a construction yard, where it would be prepared for disposal.

Any existing subtransmission lines, distribution lines, and telecommunication lines (where applicable) would be transferred to the new structures prior to removal of existing structures. Any remaining facilities that are not reused by SCE would be removed and delivered to a facility for disposal as described in Section B.4.5.4 (Reusable, Recyclable, and Waste Material Management).

The existing wood poles would be completely removed once the subtransmission, distribution, and telecommunication lines are transferred to the new poles. The removal would consist of the above- and below-ground portions of the pole. The holes left from removing the poles would be backfilled with spoils that may be available as a result of the excavation for new poles, and using imported fill as needed.

The removal of existing LWS poles would also consist of the above- and below-ground portions of the pole. The holes left from removing the poles would be backfilled with spoils that may be available as a result of the excavation from other construction areas and using imported fill as needed.

For each type of structure (TSP, LWS poles, or wood poles), a crane truck or rough-terrain crane would be used to support the structure during removal; an equipment pad of approximately 50 feet by 50 feet may be required to allow for a removal crane to be set up at a distance of up to 70 feet from the structure center line. The crane rail would be located transversely from the structure location. Structures would be dismantled down to the foundations and the materials would be transported to a construction yard where it would be stored for pick up and disposal at an approved recycling facility.

Removal of other structures, such as, cell towers and culverts have not been identified within the proposed Project area at this time.

Top Removal

Topping existing wood poles would be required when third-party telecom/cable would remain on the poles. Access to the pole tops would occur via bucket truck(s), or linemen would climb the poles where vehicle access is limited. Once the subtransmission and/or distribution conductors have been removed and transferred to the new poles, the support cross arms on the existing poles (if equipped) would be removed and the top portion of the poles above the existing telecommunication/cable attachment point would be cut and removed.

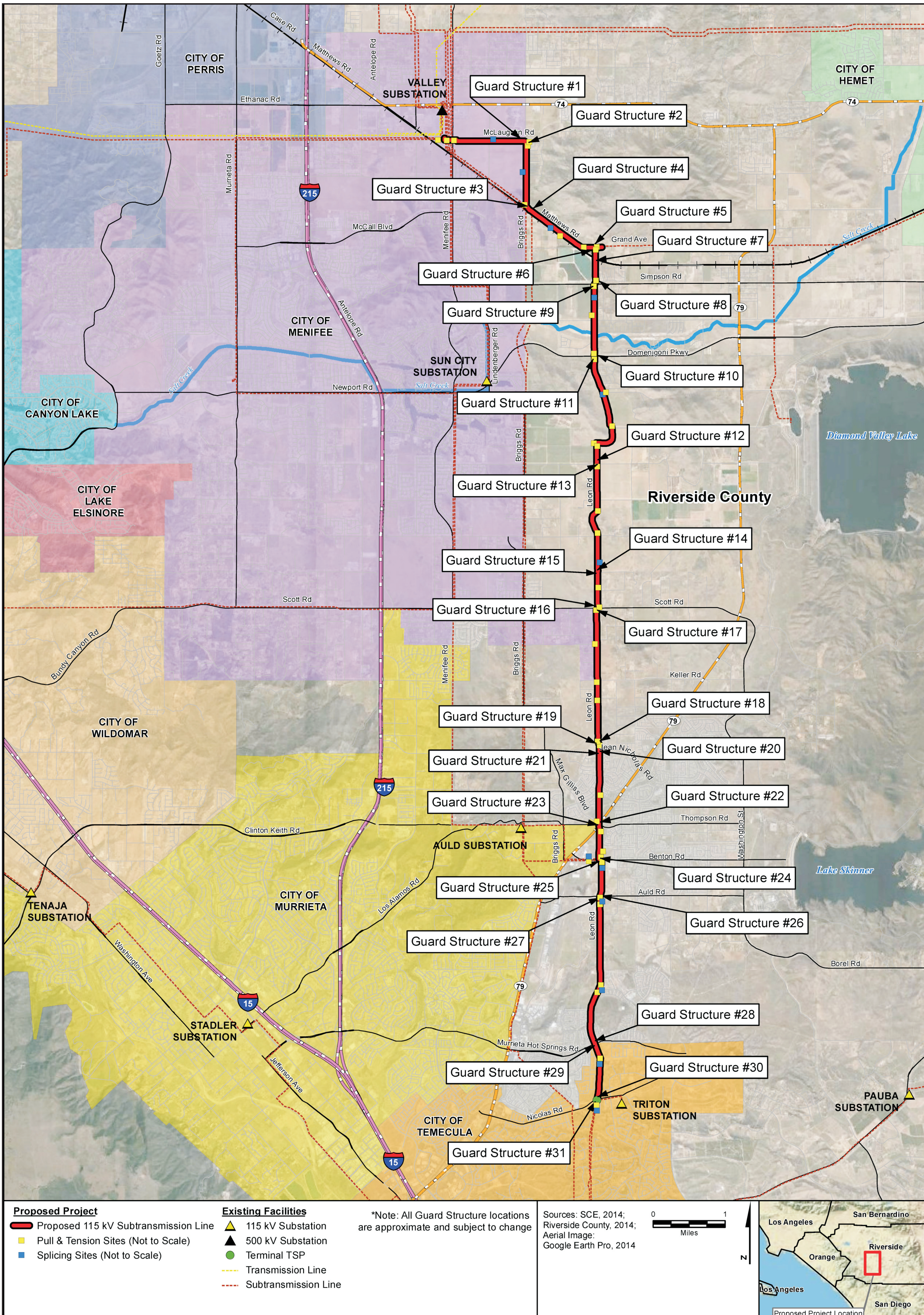


Figure B-8

Proposed Pull and Tension Sites, Splicing Sites, and Guard Structures

Source: SCE, 2014.

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B.4.6.3 TSP Foundation Installation

Each TSP would require a drilled, poured-in-place, concrete footing that forms the structure foundation. Prior to drilling for foundations, SCE, or its contractor, would contact Underground Service Alert to identify any existing underground utilities in the construction zone. In the event of unintentional damage to any other utility substructure during construction, the appropriate utility company or agency would immediately be contacted to make repairs. If there is an upset of the existing facilities, the goal would be to insure no pollutants leave the construction site. All personnel would be made aware of shut-off valves to cease the flow of water; storm drains would have inlet protection BMPs in place throughout construction, such as filter fabric along with gravel bags, to mitigate pollutant-laden water from leaving the site. In addition, a supply of gravel bags would be present to construct check dams to reduce the flow of water, if necessary. (SCE, 2014b, Q#2-37)

Once cleared, the TSP foundation hole would be drilled using truck or track-mounted excavators. Following excavation of the foundation hole, steel-reinforced cages would be set, positioning would be survey verified, and then concrete would be poured. Slight to severe ground caving is anticipated along the preferred route during the drilling of the TSP foundations due to the presence of loose soils or groundwater levels. The use of water, fluid stabilizers, drilling mud and/or casings would be made available to control ground caving and to stabilize the sidewalls from sloughing. If fluid stabilizers are utilized, mud slurry would be placed into the hole during the drilling process to prevent the sidewalls from sloughing. The concrete for the foundation would then be pumped to the bottom of the hole, displacing the mud slurry. Mud slurry brought to the surface is typically collected in a pit adjacent to the foundation or vacuumed directly into a truck to be reused or discarded at an appropriate off-site disposal facility. TSP foundations typically require an excavated hole approximately five to nine feet in diameter and approximately 20 to 40 feet deep.

Should groundwater be encountered, it would be pumped into a tank and disposed of at an off-site disposal facility in accordance with all applicable laws. Collecting groundwater would require a permit from the local Certified Unified Program Agency (CUPA). If it can be worked out with the CUPA, non-hazardous groundwater may be released on the proposed Project grounds in a manner that does not interfere with natural erosion processes (SCE, 2014b, Q#2-36). Geotechnical studies would be conducted as part of final engineering for the new TSPs. If a substantial amount of groundwater is encountered during geotechnical analysis, and if it is determined that water would need to be extracted for TSP installation, the estimated water amount would be determined at that time. Geotechnical studies would not be required for the wood or LWS poles, as the depth of these poles are approximately 10 to 12 feet, which is expected to be well above the groundwater levels along the Project route. (SCE, 2014b, Q#1-42)

Excavated material would be distributed at each structure site, used to backfill excavations from the removal of nearby structures (if any), and/or used in the rehabilitation of existing access roads. Alternatively, the excavated soil may be disposed of at an off-site disposal facility in accordance with applicable laws as described in Section B.4.5.4 (Reusable, Recyclable, and Waste Material Management).

TSPs would require approximately 15 to 95 cubic yards of concrete delivered to each structure location (approximately equivalent to the volume of soil to be excavated [SCE, 2014b, Q#1-23]). Existing concrete supply facilities would be used where feasible. Concrete samples would be drawn at the time of pour and tested to ensure engineered strengths were achieved. A normally specified SCE concrete mix typically takes approximately 20 working days to cure to an engineered strength. This strength is verified by controlled testing of sampled concrete. Once the engineered strength has been achieved, crews would be permitted to commence erection of the structure.

B.4.6.4 TSP Structure Installation

TSPs typically consist of multiple sections. Pole sections would be placed in a temporary laydown area at each pole location (see Table B-5 for approximate laydown area dimensions). Depending on conditions at the time of construction, the top sections may come pre-configured, may be configured on the ground, or configured after pole installation with the necessary cross arms, insulators, and wire stringing hardware. A crane would then be used to set each steel pole base section on top of the previously prepared foundations (described above). If existing terrain around the TSP location is not suitable to support crane activities, a temporary crane pad would be constructed within the laydown area. When the base section is secured, the subsequent section of the TSP would be placed/slipped onto the base section. The pole sections may be spot welded together for additional stability. Depending on the terrain and available equipment, the pole sections could also be pre-assembled into a complete structure prior to setting the poles.

B.4.6.5 Wood Pole Installation

Each wood pole requires a hole to be excavated using either an auger, backhoe, or with hand tools. Excavated material would be used as described in Section B.4.5.4 (Reusable, Recyclable, and Waste Material Management). Wood poles would be placed in temporary laydown areas at each pole location (see Table B-5 for approximate laydown area dimensions). While on the ground, the wood poles may be configured (if not reconfigured) with the necessary cross arms, insulators, and wire stringing hardware before being set in place. Wood poles would then be installed in the holes, typically by a line truck with an attached boom. Wood guy stub poles would be installed similarly to wood poles.

B.4.6.6 Light-Weight Steel Pole Installation

Each LWS pole requires a hole to be excavated using either an auger or backhoe. Excavated material would be used as described in Section B.4.5.4 (Reusable, Recyclable, and Waste Material Management). LWS poles consist of separate base and top sections, and may be placed in temporary laydown areas at each pole location (see Table B-5 for approximate laydown area dimensions). Depending on conditions at the time of construction, the top sections may come preconfigured, may be configured on the ground, or configured after pole installation with the necessary cross arms, insulators, and wire-stringing hardware. LWS poles would then be installed in the holes, typically by a line truck with an attached boom. When the base section is secured, the top section would be installed on top of it. Depending on the terrain and available equipment, the pole sections could also be assembled into a complete structure on the ground prior to setting the poles in place within the holes. LWS guy stub poles would be installed similarly to LWS poles.

B.4.6.7 Subtransmission Land Disturbance

Land disturbance for the new 115-kV subtransmission line portion of the proposed Project includes ground disturbance associated with the installation of access roads, 115-kV subtransmission line installation and conductor transfer, and relocation of existing distribution facilities. The estimated land disturbance for these Project features are summarized in Table B-7.

Table B-7. Subtransmission Approximate Land Disturbance

Project Feature	Site Quantity	Disturbance Acreage Calculation (LxW)	Acres Disturbed During Construction	Acres to be Restored	Acres Permanently Disturbed
Subtransmission Component					
Guard Structures [1]	31	150' x 75'	8.0	8.0	0.0
Remove Existing Subtransmission Wood Poles/Wood Guy Stub Poles [1]	35	150' x 75'	9.0	9.0	0.0
Remove LWS Poles [1]	5	150' x 150'	2.6	2.6	0.0
Construct New TSPs [1]	30	200' x 150'	20.7	18.9	1.7
Construct LWS Poles [1]	12	150' x 75'	3.1	3.0	0.1
Construct New Wood Poles/Wood Guy Stub Poles [1]	266	150' x 75'	69.0	66.3	2.7
Anchors	165	50' x 50'	9.5	7.8	1.7
Reconfigure Pole Tops [2]	51	50' x 50'	2.9	2.9	0.0
Stringing Conductor/Cable (Pull & Tension) Setup Area [3]	43	300' x 100'	30.0	30.0	0.0
Stringing Conductor/Cable (Splicing) Setup Area [3]	12	150' x 100'	4.1	4.1	0.0
Install Underground Trench, Conduit, and Cable [4]	1,600	Linear feet x 30' wide	1.2	1.2	0.0
Install Underground Vault [5]	3	100' x 100'	0.7	0.7	0.0
Access Locations [6]	303	Varies	7.7	0.0	7.7
Permanent Access Roads [7]	1	400' x 18'	0.2	0.0	0.2
Material Staging Yards [8]	4	Acres	11.0	11.0	0.0
Subtotal: Subtransmission [9]			**179.7**	**165.5**	**14.2**
Distribution Relocation Component					
Remove Existing Distribution Wood Poles/Wood Guy Stub Poles [10]	230	50' x 50'	13.2	13.2	0.0
Install Underground Trench, Conduit, and Cable [11]	900	Linear feet x 30' wide	0.6	0.6	0.0
Subtotal: Distribution Relocation [9]			**13.8**	**13.8**	**0.0**
Total Estimated			**193.5**	**179.3**	**14.2**

Source: SCE, 2014a (PEA Table 3.5)

Notes:

1 Includes structure assembly and erection, structure removal, conductor and/or OHGW installation, conductor transfer, conductor removal, and conductor splicing; non-permanent area to be returned/restored after construction. The permanent area of disturbance includes that portion of ROW within 25 feet of a TSP or 10 feet of an LWS pole, wood pole, wood down guy, or anchor and will remain cleared of vegetation; permanently disturbed area is approximately 0.06 acres per TSP, 0.01acre per LWS wood pole, wood down guy, or anchor.

2 Reconfigure pole tops from single circuit to double circuit.

3 Based on 6,000 feet conductor/cable reel lengths, number of circuits, and route design.

4 Includes installing trench, conduit, cable, and full encasement duct bank (300 feet within the substation and 1,300 feet outside the fence of Valley Substation).

5 Includes structure assembly and installing the vault. Area to be restored after construction. Portion of ROW within 10 feet of the vault to remain cleared of vegetation. Permanently disturbed area for vault is 0.006 acre. Permanent disturbance for all three vaults totals 0.018 acre.

6 Based on an average 50 foot length by road width (which varies from 14 to 32 feet, curve-widening, intersections, and miscellaneous transitional areas) for approximately 303 pole sites. Although access is only needed temporarily across this

area until such time that the proposed and/or dedicated public streets are improved to ultimate build out as identified in the General Plan Circulation Element, the area is being classified as permanent disturbance for environmental review and evaluation purposes.

7 Based on 400 feet length of road multiplied by road width of 14 feet plus a 2-foot shoulder on each side of road; does not include existing access roads that do not require civil design.

8 Material staging yards could be used as a reporting location for workers, vehicle and equipment parking, and/or material storage.

9 The disturbed acreage calculations are estimates based upon SCE's preferred area of use for construction work for the described project feature; these estimates are subject to revision based upon final engineering.

10 Includes the removal of existing conductor and teardown of existing structures.

11 Includes installing trench, conduit, and cable for distribution facilities.

B.4.7 Subtransmission Line Construction (Below Ground)

The proposed Project includes a total of approximately 1,800 feet of new underground 115-kV subtransmission line and associated transition and support structures. This includes 1,600 feet of cable within the underground duct bank, plus 200 feet of cable to transition from an underground to overhead configuration at the riser TSP east of Menifee Road and at the rack connection within Valley Substation (SCE, 2014b, Q#1-37c). Below-ground construction activities associated with the installation of the 115-kV subtransmission line include surveying, trenching, and vault installation, as described below.

B.4.7.1 Subtransmission Survey

Underground construction activities would begin with surveying the existing underground utilities along the proposed underground subtransmission line route. SCE would notify all applicable utilities via Underground Service Alert to locate and mark existing utilities, and conducting exploratory excavations (potholing) as necessary to verify the location of existing utilities. SCE would secure encroachment permits for trenching in public streets, as required.

B.4.7.2 Subtransmission Trenching and Duct Bank Installation

To place the proposed 115-kV subtransmission line underground, an approximately 20- to 24-inch wide by 60-inch deep trench would be needed (located within the 30-foot wide overall temporary work area for installation of underground trench, conduit, and cable – see Table B-7; SCE, 2014b, Q#1-39). This depth is required to meet the minimum 36 inches of cover above the duct bank. Approximately 600 cubic yards of soil would be excavated for the duct bank and another approximately 450 cubic yards for the three vaults; two percent or less of the excavated soils would be used as backfill over the top of the duct bank and vaults (SCE, 2014b, Q#1-41).

Trenching may be performed by using the following general steps, including but not limited to: mark the location and applicable underground utilities (see "Subtransmission Survey" above), lay out trench line, saw cut asphalt or concrete pavement as necessary, dig to appropriate depth with a backhoe or similar equipment, and install the new duct bank.

The trench would be widened and shored where appropriate to meet CAL-OSHA requirements. Trenching would be staged so that open trench lengths would not exceed that which is required to install the duct banks. Where needed, open trench sections would have steel plates placed over them to maintain vehicular and pedestrian traffic. Provisions for emergency vehicle access would be arranged with local jurisdictions in advance of construction activities.

In the event that potentially contaminated soil is encountered during excavation of the trench, work would stop at that location and SCE's Spill Response Coordinator would be called to the site to make an assessment and notify the proper authorities. Work would continue at that location only when given clearance by the Spill Response Coordinator. The potentially contaminated soil would be segregated into lined stockpiles or, placed in dump trucks or roll-off containers, sampled, and tested to determine appropriate handling, treatment, and disposal options. If the soil is classified as hazardous, it would be properly managed on location and transported in accordance with U.S. Department of Transportation regulations using a Uniform Hazardous Waste Manifest to a Class I Landfill or other appropriate soil treatment or recycling facility. All hazardous materials would be transported, used, and disposed of in accordance with applicable rules, regulations, and SCE protocols designed to protect the environment, workers, and the public. A Hazardous Materials Plan would be developed by SCE as part of the Project to ensure these procedures are adhered to SCE and its contractors (SCE, 2014b, Q#1-38).

As trenching for the underground 115-kV subtransmission line is completed, SCE would begin to install the underground duct bank. The duct bank would be approximately 21-inches high by 17.5-inches wide (see Figure B-5 for standard duct bank configuration). Once the duct bank has been installed, the trench would typically be backfilled with a cement slurry mix. Excavated materials would be reused as fill or be disposed of at an off-site disposal facility in accordance with applicable laws. A list of likely off-site disposal facilities within a 50-mile radius of the proposed Project is provided in Table B-8. Should groundwater be encountered, it would be pumped into a tank and disposed of at an off-site disposal facility in accordance with applicable laws. However, groundwater is not anticipated at the depths required for underground trenching (60 inches/5 feet), as this is expected to be well above any potential groundwater table levels (SCE, 2014b, Q#1-42).

Table B-8. Off-Site Disposal Facilities

Disposal Facility	City	Distance
Lamb Canyon Landfill	Beaumont	Approximately 20 miles driving distance from Valley Substation
San Timoteo Sanitary Landfill	Redlands	Approximately 30 miles driving distance from Valley Substation
Mid Valley Landfill	Rialto	Approximately 41 miles driving distance from Valley Substation

Source: SCE, 2014a (PEA Table 3.7)

B.4.7.3 Subtransmission Vault and Duct Bank Installation

Vaults are below-grade concrete enclosures where the duct banks terminate. Vaults are constructed of prefabricated steel-reinforced concrete and designed to withstand heavy truck traffic loading. The inside dimensions of the underground vaults would be approximately 10-feet wide by 20-feet long with an approximate height of 9.5 feet (see Figure B-4 for standard vault configuration). The vaults would be placed approximately 500 to 1,500 feet apart along the underground portion of the subtransmission line route. Initially, vaults are used as pulling locations to pull cable through the conduits. After the cable is installed, the vaults are utilized to splice the cables together. During operation, vaults provide access to the underground cables for maintenance, inspections, and repairs.

Installation of each vault would typically take place over a one-week period depending on soil conditions. First, the vault pit would be excavated and shored; a minimum of six inches of mechanically compacted aggregate base would be placed to cover the entire bottom of the pit, followed by delivery and installation of the vault. Once the vault is set, grade rings and the vault casting would be added and set to match the existing grade. The excavated area would be backfilled with a sand slurry mix to a point just below the top of the vault roof. Excavated materials, if suitable, would be used to backfill the remainder of the excavation, and any excess spoils would be disposed of at an off-site disposal facility in accordance with all applicable laws. Finally, the excavated area would be restored as required.

B.4.8 Conductor/Cable Installation

B.4.8.1 Above Ground

Wire stringing activities would be completed in accordance with SCE's common practices and similar to process methods detailed in the Institute of Electrical and Electronics Engineers Standard 524-2003, Guide to the Installation of Overhead Transmission Line Conductors. To ensure the safety of construction workers and the public, safety devices such as traveling grounds, guard structures (described in more detail below), radio-equipped public safety roving vehicles, and linemen would be in place prior to the initiation of wire stringing activities. Access to trails would be restricted during wire stringing activities; need for closure is expected to be intermittent with a total cumulative duration estimated to be no more than two weeks for wire stringing activities (removal and install) for the portion of the trail that is within the ROW (SCE, 2014b, Q#2-47). Advanced planning is required to determine circuit outages, pulling times, and safety protocols to ensure safe installation of wire is accomplished.

Wire stringing includes all activities associated with the installation of the primary conductors onto subtransmission line structures. These activities include the installation of conductor, ground wire (OHGW/OPGW), insulators, stringing sheaves (rollers or travelers), vibration dampeners, weights, suspension and dead-end hardware assemblies for the entire length of the route.

The following steps describe typical wire-stringing activities:

- Step 1 – Planning: A wire-stringing plan is developed to determine the sequence of wire pulls and the set-up locations for the wire pull/tensioning/splicing equipment.
- Step 2 – Sock Line Threading: A bucket truck is typically used to install a lightweight sock line from structure to structure. The sock line would be threaded through the wire rollers in order to engage a camlock device that would secure the pulling sock in the roller. This threading process would continue between all structures through the rollers of a particular set of spans selected for a conductor pull.
- Step 3 – Pulling: The sock line would be used to pull in the conductor pulling rope or cable utilizing a pulling machine. The pulling rope or cable would be attached to the conductor using a special swivel joint to prevent damage to the wire, and to allow the wire to rotate freely to prevent complications from twisting as the conductor unwinds off the reel.
- Step 4 – Splicing, Sagging, and Dead-Ending: Once the conductor is pulled in, if necessary, mid-span splicing would be performed. Splicing would occur utilizing a mechanical sleeve, which would be attached to either end of two individual conductors (approximately midway between the nearest poles). Implosive sleeves would not be utilized (SCE, 2014b, Q#1-36). Once the splicing has been completed, a tensioning machine (located at a tensioning site) would be activated, and the conductor would be raised to the final sag height and tension and then dead-ended to structures.
- Step 5 – Clipping-In: After the conductor is dead-ended, the conductors would be secured to all tangent structures; a process called clipping-in. Once this is complete, spacers would be attached between the bundled conductors of each phase to keep uniform separation between each conductor.

The transfer of existing telecommunications facilities would consist of installing new cross arms and/or hardware on the new 115-kV poles, removing the cable from the existing poles and attaching to the new poles, and then removing the cross arms and/or hardware from the existing pole. See also Section B.4.6.2 under "Top Removal", for instances when third-party telecom/cable would remain on the existing poles.

Guard Structures

Guard structures are temporary facilities typically installed at transportation, flood control, and utility crossings for wire-stringing/removal activities. Guard structures are typically standard wood poles installed prior to stringing operations, which stop the movement of conductor should it momentarily drop below a conventional stringing height. Depending on the overall spacing of the conductors being installed, approximately two to four guard poles would be required on either side of a crossing. At highway crossings, temporary netting may be installed as an additional measure. Guard structures would be removed after the conductor is secured into place. A biological monitor would assist with the placement of the guard structures to ensure impacts to special status resources are avoided to the extent feasible.

In some locations, such as low-traffic roads or shared driveways, SCE may opt to use modified boom trucks to protect the crossing and/or flagmen to control traffic. The decision as to use of guard structures verses boom trucks would be determined during construction. SCE would work closely with the applicable jurisdiction to secure the necessary permits to string conductor over the applicable infrastructure.

It is estimated that approximately 31 guard structures would be constructed at 17 locations along the proposed Project route, as shown in Figure B-8 (Proposed Pull and Tension Sites, Splicing Sites, and Guard Structures). Table B-9 lists the locations and type of guard method(s) expected to be employed at each identified location, along with the type of crossing to be protected. These locations and methods are approximate and subject to change based on final engineering.

Table B-9. Proposed Guard Structure Locations

Guard Structure Number	Location[1]	Guard Method[2]	Crossing Type
1	West side of Briggs Road, South of Private Road/McLaughlin Road	GS & TC	Road
2	East side of Briggs Road, South of Private Road/McLaughlin Road	GS & TC	Road
3	West side of Briggs Road and north side of Case Road	GS	Road
4	East side of Briggs Road and north side of Case Road	GS	Road
5	North side of Grand Avenue, East of Leon Road	GS	Road
6	South side of Grand Avenue, East of Leon Road	GS	Road
7	Leon Road at train track at~700 feet south of Grand Avenue	GS/BT[3]	Train Track
8	East side of Leon Road, North of Simpson Road	GS	Road
9	West side of Leon Road, South of Simpson Road	GS	Road
10	West side of Leon Road, North of Domenigoni Parkway	GS/TC	Road & Street Light
11	West side of Leon Road, South of Domenigoni Parkway	GS/TC	Road & Traffic Signal
12	North side of Holland Road at Leon Road	GS	Road
13	South side of Holland Road at Leon Road	GS	Road
14	East side of Leon Road at north side of Wickerd Road	GS	Road
15	East side of Leon Road at south side of Wickerd Road	GS	Road
16	East side of Leon Road, North of Scott Road	GS	Road & Distribution OH

Table B-9. Proposed Guard Structure Locations

Guard Structure Number	Location[1]	Guard Method[2]	Crossing Type
17	West side of Leon Road, South of Scott Road	GS	Road & Distribution OH
18	West side of Leon Road, ~700 feet North of Jean-Nicholas Road	GS/TC	Road
19	East side of Leon Road, ~575 feet North of Jean-Nicholas Road	GS/TC	Road
20	East side of Leon Road at north side of Jean-Nicholas Road	GS/TC	Road
21	East side of Leon Road at south side of Jean-Nicholas Road	GS/TC	Road
22	Old Leon Road at North Corner of Winchester Road & Max Gillis Boulevard	GS/TC	Road
23	Old Leon Road at South Corner of Winchester Road & Thompson Road	GS/TC	Road
24	North side of Benton Road at Leon Road	GS/TC	Road
25	South side of Benton Road at Leon Road	GS/TC	Road
26	North side of Auld Road at Leon Road	GS/TC	Road & Distribution OH
27	South side of Auld Road at Leon Road	GS/TC	Road & Distribution OH
28	North side of Murrieta Hot Springs Road and Chandler Drive	GS/TC	Road
29	South side of Murrieta Hot Springs Road and Chandler Drive	GS/TC	Road
30	North side of Nicolas Road ~970 feet west of Calle Medusa	GS/TC	Road & Distribution OH
31	South side of Nicolas Road ~970 feet west of Calle Medusa	GS/TC	Road & Distribution OH

Source: SCE, 2014a (PEA Table 3.6)
Notes:
*Acronyms: BT = boom truck; OH = overhead; GS = guard structure; TC = traffic control
1 These crossing locations, which have been identified based on preliminary engineering, could be protected with guard structures, boom trucks, and/or traffic control when subtransmission conductor span sections are being pulled. These locations may be subject to change upon further review and requirements as identified in the final engineering. (Also, please refer to Figure B-8, Proposed Pull and Tension Sites, Splicing Sites, and Guard Structures).
2 The methods used to guard the various crossings would be wood pole type guard structures (GS), or specially modified boom trucks or cranes (BT), or flagmen controlling traffic (TC).
3 A boom truck would be utilized in the area adjacent to the railroad track.

B.4.8.2 Below Ground

Following vault and duct bank installation, which is described in greater detail in Section B.4.7.3, SCE would pull the electrical cables through the duct banks, splice the cable segments at each vault, and terminate the cables at the transition structures where the subtransmission line would transition from underground to overhead. To pull the cables through the duct banks, a cable reel would be placed at one end of the conduit segment, and a pulling rig would be placed at the opposite end. The cable from the cable reel would be attached to a rope in the duct bank and the rope linked to the pulling rig, which would pull the rope and the attached cable through the duct banks. A lubricant would be applied as the cable enters the ducts to decrease friction and facilitate travel through the polyvinyl chloride (PVC – synthetic plastic) conduits. The electrical cables for the 115-kV subtransmission line would typically be pulled through the individual conduits in the duct bank at a rate of two to three segments between vaults per day. After cable pulling is completed, the electrical cables would be spliced together. A splice crew would conduct splicing operations at each vault location and continue until all splicing is completed.

B.4.9 Substation Construction

Construction activities associated with the proposed Project would occur at the Valley and Triton Substations, and include site preparation and grading, below- and above-grade construction, and equipment installation.

B.4.9.1 Site Preparation and Grading

To accommodate the proposed facilities (see Section B.3.4 for a description of the substation modifications), areas to be disturbed would be backfilled with native on-site soil and compacted to 90- to 95-percent relative compaction. These areas are currently covered with ¾-inch crushed aggregate rock and would be restored back to the same condition upon completion.

B.4.9.2 Below-Grade Construction

Modifications to below-grade facilities located at Valley Substation include, but are not limited to, installation of a ground grid, equipment foundations, conduits, duct banks, vaults, and manholes. Below-grade construction would involve the drilling and digging of holes for the foundations. For additional information regarding below-grade construction, see Section B.4.7.

As noted, new equipment foundations would be required at the Valley Substation, which would result in soil excavation that would need to be exported off site. The approximate surface area and volumes for the below-grade components proposed at the Valley Substation are shown in Table B-10.

Table B-10. Substation Cut and Fill Grading Summary

Element	Material	Approximate Surface Area (Square Feet)	Approximate Volume (Cubic Yards)
Substation equipment foundations, cut	Soil	366	82.44
Other Surfacing	Concrete	366	67.63

Source: SCE, 2014a (PEA Table 3.8)

B.4.9.3 Above-Grade Construction

Installation of above-grade substation components such as buses, capacitor banks, switchracks, disconnect switches, circuit breakers, and steel support structures would follow construction of the below-grade facilities. Installation of such facilities within the existing Valley Substation would include making connections or utilizing existing buses, cable trenches, and steel structures to integrate the new facilities in with the existing facilities.

B.4.9.4 Telecommunications Equipment Installation

New telecommunications equipment would be installed at the existing Valley and Triton Substations. All new telecommunications equipment installations would occur within the existing MEER; therefore, no additional ground disturbance is associated with this proposed substation work. Furthermore, existing roads in the proposed Project area are adequate to provide access for installation of the proposed telecommunication facilities.

B.4.10 Land Disturbance Summary

Land disturbance would include all areas affected by construction of the proposed Project. It is estimated that the total permanent land disturbance for the proposed Project would be approximately 14.2 acres, while the temporary land disturbance would be approximately 194 acres. The estimated amount of land disturbance for each Project component is summarized in Table B-7.

B.4.11 Construction Workforce and Equipment

The estimated activities, materials, personnel, and equipment required for construction of the proposed Project, including the subtransmission component, substation modifications, and telecommunications system upgrades are summarized in Tables B-11 through B-13. Additionally, Table B-14 provides a list of the anticipated construction equipment, with a brief description of the use of that equipment.

Construction would be performed by either SCE construction crews or contractors. If SCE construction crews are used, they are typically based at SCE's local facilities, (e.g., service centers, substation, transmission ROW, etc.) or a temporary material staging yard set up for the proposed Project. Contractor construction personnel would be managed by SCE construction management personnel and based out of the contractor's existing yard, an SCE's substation, or temporary material staging yard set up for the proposed Project.

It is anticipated that a total of approximately 67 construction personnel would work on any given day, with a conservative estimated maximum of approximately 75 (SCE, 2014b, Q#2-46). For the subtransmission and distribution line component, SCE anticipates approximately 55 construction personnel to work on any given day. Approximately 10 construction personnel are anticipated to work on the substation component on any given day. Crews are anticipated to work concurrently whenever possible; however, the estimated deployment and number of crew members would vary depending on factors such as material availability, resource availability, and construction scheduling. In general, construction efforts would occur in accordance with accepted construction industry standards. If feasible, SCE would comply with local ordinances for construction activities.

Construction personnel commuting is estimated to add approximately 134 total daily trips to area roadways. Construction vehicles would add an additional 268 total daily trips to area roadways. When combined, construction personnel commuting and transportation of construction materials and equipment would add a maximum of 402 total daily trips to area roadways. (SCE, 2014b, Q#1-20)

Table B-11. Subtransmission Construction Equipment and Workforce Estimates

Work Activity				Activity Production			
Primary Equipment Description	**Estimated Horsepower (HP)**	**Probable Fuel Type**	**Primary Equipment Quantity**	**Estimated Workforce**	**Estimated Schedule (Days)**	**Duration of Use (Hrs/Day)**	**Estimated Production**
Survey [1]				**4**	**15**		**15.4 Miles**
1-Ton Truck, 4x4	300	Gas	2			8	
Marshalling Yard (Staging Area or Yard) [2]				**4**			**N/A**
1-Ton Truck, 4x4	300	Gas	1		Duration of Project At Each Yard	4	
R/T Forklift	125	Diesel	1			6	
Boom/Crane Truck	350	Diesel	1			2	
Water Truck	300	Diesel	1			8	
Truck, Semi-Tractor	400	Diesel	1			2	
Roads and Landing Work [3]				**5**	**39**		**400 feet & 303 Pads**
1-Ton Truck, 4x4	300	Gas	1		39	8	
Backhoe/Front Loader	125	Diesel	1		39	4	
Track Type Dozer	150	Diesel	1		39	4	
Motor Grader	250	Diesel	1		39	6	
Water Truck	300	Diesel	1		39	8	

Table B-11. Subtransmission Construction Equipment and Workforce Estimates

Work Activity				Activity Production			
Primary Equipment Description	**Estimated Horsepower (HP)**	**Probable Fuel Type**	**Primary Equipment Quantity**	**Estimated Workforce**	**Estimated Schedule (Days)**	**Duration of Use (Hrs/Day)**	**Estimated Production**
Drum Type Compactor	100	Diesel	1		39	6	
Excavator	250	Diesel	1		39	4	
Lowboy Truck/Trailer	450	Diesel	1		39	4	
Tree Trim and Removal				**5**	**12**		**27 Trees**
1-Ton Truck	300	Gas	1		12	8	
Debris Haul Truck	300	Diesel	1		12	8	
Manlift/Bucket Truck	250	Diesel	1		12	8	
Chipper	48	Diesel	1		12	8	
Stump Grinder	30	Diesel	1		12	4	
Guard Structure Installation [4]				**6**	**9**		**31 Structures**
3/4-Ton Truck, 4x4	275	Gas	1		9	8	
1-Ton Truck, 4x4	300	Gas	1		9	8	
Compressor Trailer	60	Diesel	1		9	4	
Manlift/Bucket Truck	250	Diesel	1		9	4	
Boom/Crane Truck	350	Diesel	1		9	6	
Auger Truck	210	Diesel	1		9	4	
Extendable Flat Bed Pole Truck	400	Diesel	1		9	8	
Relocate Existing Conductor and OHGW [5]				**20**	**7**		**3.4 Circuit Miles**
1-Ton Truck, 4x4	300	Gas	2		7	4	
Manlift/Bucket Truck	250	Diesel	2		7	8	
Boom/Crane Truck	350	Diesel	2		7	8	
Bull Wheel Puller	350	Diesel	1		7	6	
Sock Line Puller	300	Diesel	1		7	6	
Static Truck/ Tensioner	350	Diesel	1		7	6	
Material Handling Truck	315	Diesel	1		7	8	
Lowboy Truck/Trailer	450	Diesel	2		7	4	
Wood/Wood Guy Stub Pole/LWS Pole Removal [6]				**6**	**6**		**40 Poles**
1-Ton Truck, 4x4	300	Gas	2		6	8	
Compressor Trailer	60	Diesel	1		6	4	
Backhoe/Front Loader	125	Diesel	1		6	6	
Manlift/Bucket Truck	250	Diesel	1		6	6	
Boom/Crane Truck	350	Diesel	1		6	6	
Flat Bed Pole	400	Diesel	1		6	8	
Install TSP Foundations [7]				**6**	**60**		**30 TSPs**
3/4-Ton Truck, 4x4	275	Gas	1		60	4	
Boom/Crane Truck	350	Diesel	1		60	4	

Table B-11. Subtransmission Construction Equipment and Workforce Estimates

Work Activity				Activity Production			
Primary Equipment Description	**Estimated Horsepower (HP)**	**Probable Fuel Type**	**Primary Equipment Quantity**	**Estimated Workforce**	**Estimated Schedule (Days)**	**Duration of Use (Hrs/Day)**	**Estimated Production**
Backhoe/Front Loader	125	Diesel	1		60	6	
Auger Truck	210	Diesel	1		60	6	
Water Truck	300	Diesel	1		60	8	
Dump Truck	350	Diesel	1		60	4	
Material Handling Truck	315	Diesel	1		60	8	
Concrete Mixer Truck	350	Diesel	3		60	2	
TSP Haul [8]				**4**	**9**		**30 TSPs**
3/4-Ton Truck, 4x4	275	Gas	1		9	8	
Boom/Crane Truck	350	Diesel	1		9	6	
Flat Bed Pole Truck	400	Diesel	1		9	8	
TSP Assembly [9]				**8**	**30**		**30 TSPs**
3/4-Ton Truck, 4x4	275	Gas	2		30	4	
1-Ton Truck, 4x4	300	Gas	2		30	4	
Compressor Trailer	60	Diesel	1		30	6	
Material	315	Diesel	1		30	8	
Boom/Crane Truck	350	Diesel	1		30	8	
TSP Erection [10]				**8**	**30**		**30 TSPs**
3/4-Ton Truck, 4x4	275	Gas	2		30	4	
1-Ton Truck, 4x4	300	Gas	2		30	4	
Compressor Trailer	60	Diesel	1		30	4	
Boom/Crane Truck	350	Diesel	1		30	8	
Wood/Wood Guy Stub Pole/LWS Pole Haul [11]				**4**	**47**		**266 Wood & 12 LWS Poles**
3/4-Ton Truck, 4x4	275	Gas	1		47	8	
Boom/Crane Truck	350	Diesel	1		47	6	
Flat Bed Pole Truck	400	Diesel	1		47	8	
Wood/LWS Pole Assembly [12]				**8**	**65**		**266 Wood & 12 LWS Poles**
3/4-Ton Truck, 4x4	275	Gas	2		65	4	
1-Ton Truck, 4x4	300	Gas	2		65	4	
Compressor Trailer	60	Diesel	1		65	6	
Material Handling Truck	315	Diesel	1		65	8	
Boom/Crane Truck	350	Diesel	1		65	8	
Install Wood/Wood Guy Stub Pole/LWS Pole/Anchor [13]				**6**	**70**		**278 Poles**
1-Ton Truck, 4x4	300	Gas	1		70	8	
Manlift/Bucket Truck	250	Diesel	1		70		
Boom/Crane Truck	350	Diesel	1		70	6	
Auger Truck	210	Diesel	1		70	4	
Backhoe/Front Loader	125	Diesel	1		70	8	
Material Handling Truck	315	Diesel	1		70	8	

Table B-11. Subtransmission Construction Equipment and Workforce Estimates

Work Activity				Activity Production			
Primary Equipment Description	**Estimated Horsepower (HP)**	**Probable Fuel Type**	**Primary Equipment Quantity**	**Estimated Workforce**	**Estimated Schedule (Days)**	**Duration of Use (Hrs/Day)**	**Estimated Production**
Extendable Flat Bed Pole Truck	400	Diesel	1		70	8	
Reconfigure Existing Structures [14]				**20**	**13**		**51 Structures**
3/4-Ton Truck, 4x4	275	Gas	2		13	4	
1-Ton Truck, 4x4	300	Gas	2		13	4	
Compressor Trailer	60	Diesel	1		13	6	
Material Handling Truck	315	Diesel	1		13	8	
Boom/Crane Truck	350	Diesel	1		13	8	
Install Conductor and Ground Wire [15]				**24**	**75**		**15.4 Miles Conductor 9 Circuit Miles Ground Wire**
1-Ton Truck, 4x4	300	Gas	3		75	4	
Manlift/Bucket Truck	250	Diesel	4		75	8	
Boom/Crane Truck	350	Diesel	1		75	8	
Boom/Truck (guard)	350	Diesel	4		75	2	
Dump Truck	350	Diesel	1		75	2	
Wire Truck/ Trailer	350	Diesel	2		75	6	
Sock Line Puller	300	Diesel	1		75	6	
Bull Wheel Puller	350	Diesel	1		75	6	
Static Truck/ Tensioner	350	Diesel	1		75	6	
Backhoe/Front Loader	125	Diesel	1		75	2	
Material Handling Truck	315	Diesel	1		75	8	
Lowboy Truck/Trailer	450	Diesel	2		75	4	
Guard Structure Removal [16]				**6**	**9**		**31 Structures**
3/4-Ton Truck, 4x4	275	Gas	1		9	8	
1-Ton Truck, 4x4	300	Gas	1		9	8	
Compressor Trailer	60	Diesel	1		9	4	
Manlift/Bucket Truck	250	Diesel	1		9	4	
Boom/Crane Truck	350	Diesel	1		9	6	
Extendable Flat Bed Pole Truck	400	Diesel	1		9	8	
Backhoe/Front Loader	125	Diesel	1		9	6	
Restoration [17]				**7**	**15**		**15.4 Miles**
1-Ton Truck, 4x4	300	Gas	2		15	4	
Backhoe/Front Loader	125	Diesel	1		15	4	
Motor Grader	250	Diesel	1		15	6	
Water Truck	300	Diesel	1		15	8	

Table B-11. Subtransmission Construction Equipment and Workforce Estimates							
Work Activity				**Activity Production**			
Primary Equipment Description	**Estimated Horsepower (HP)**	**Probable Fuel Type**	**Primary Equipment Quantity**	**Estimated Workforce**	**Estimated Schedule (Days)**	**Duration of Use (Hrs/Day)**	**Estimated Production**
Drum Type Compactor	100	Diesel	1		15	4	
Lowboy Truck/Trailer	450	Diesel	1		15	4	
Vault Installation [18]				**6**	**9**		**3 Vaults**
1-Ton Truck, 4x4	300	Gas	2		9	4	
Backhoe/Front Loader	125	Diesel	1		9	8	
Excavator	250	Diesel	1		9	6	
Dump Truck	350	Diesel	2		9	8	
Water Truck	300	Diesel	1		9	8	
Crane (L)	500	Diesel	1		9	6	
Concrete Mixer Truck	350	Diesel	3		9	2	
Lowboy Truck/Trailer	450	Diesel	1		9	4	
Material Handling Truck	315	Diesel	1		9	8	
Flat Bed Truck/Trailer	400	Diesel	3		9	4	
Duct Bank Installation [19]				**6**	**7**		**1,600 Feet Trench**
1-Ton Truck, 4x4	300	Gas	2		7	4	
Compressor Trailer	60	Diesel	1		7	4	
Backhoe/Front Loader	125	Diesel	1		7	6	
Dump Truck	350	Diesel	2		7	6	
Pipe Truck/Trailer	275	Diesel	1		7	6	
Water Truck	300	Diesel	1		7	8	
Concrete Mixer Truck	350	Diesel	3		7	2	
Lowboy Truck/Trailer	450	Diesel	1		7	4	
Install Underground Cable [20]				**8**	**2**		**1,800 Feet**
1-Ton Truck, 4x4	300	Gas	2		2	4	
Manlift/Bucket Truck	250	Diesel	1		2	6	
Boom/Crane Truck	350	Diesel	1		2	6	
Wire Truck/Trailer	350	Diesel	2		2	6	
Pulling Rig	350	Diesel	1		2	6	
Material Handling Truck	315	Diesel	1		2	8	
Static Truck/ Tensioner	350	Diesel	1		2	6	
DISTRIBUTION RELOCATION							
Relocate Existing Conductor [21]				**4**	**167**		**8 miles**
Foreman Truck	300	Diesel	1		167	8	
Reel Truck	300	Diesel	1		167	8	
Bucket Truck	300	Diesel	1		167	8	

Table B-11. Subtransmission Construction Equipment and Workforce Estimates

Work Activity				Activity Production			
Primary Equipment Description	Estimated Horsepower (HP)	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production
Arrow Board Trailer	0	Solar/ Electric	1		167	8	
Flatbed Truck	400	Diesel	1		167	8	
Wood Pole Removal [22]				**3**	**41**		**230 Wood Poles**
Foreman Truck	300	Diesel	1		41	8	
Lineman/Boom Truck	300	Diesel	1		41	8	
Flatbed Trailer	400	Diesel	1		41	8	
Arrow Board Trailer	0	Solar/ Electric	1		41	8	
Install Distribution Underground Cable [23]				**7**	**20**		**900 Feet**
Crew Truck	300	Diesel	1		20	8	
Foreman Truck	300	Diesel	1		20	8	
Reel Truck	300	Diesel	1		20	8	
Rodder Truck	400	Diesel	1		20	8	
Concrete Mixer Truck	350	Diesel	1		20	8	
1-Ton Truck, 4x4	300	Gas	1		20	8	
Backhoe/Front Loader	125	Diesel	1		20	8	
Lowboy Truck/Trailer	450	Diesel	1		20	8	

Source: SCE, 2014a (PEA Table 3.10-A)

Notes: All data provided in this table is based on planning-level assumptions and may change based on any of the following: the completion of final engineering; any updates and/or changes in the proposed Project scope; any updates and/or changes to the project description; any changes to existing field conditions and/or the identification of yet unknown field conditions; outage constraints; the availability of labor, material, and equipment; as well as any constraints caused by environmental and/or permitting requirements.

1 Survey = one 4-man crew
2 Marshalling Yards = one 4-man crew
3 Roads & Landing Work = one 5-man crew
4 Guard structure installation = one 6-man crew
5 Relocate Existing Conductor & Ground Wires = two 10-man crews
6 Remove Existing Wood/Wood Guy Stub Poles/LWS Poles = one 6-man crew
7 Install Foundations for TSPs = one 6-man crew
8 TSP Haul = one 4-man crew
9 TSP Assembly = one 8-man crew
10 TSP Erection = one 8-man crew
11 Wood/Wood Guy Stub Pole/LWS Pole Haul = one 4-man crew
12 Wood/LWS Pole Assembly = one 8-man crew
13 Install Wood/Wood Guy Stub Pole/LWS Pole/Anchor = one 8-man crew
14 Reconfigure Existing Structures = two 10-man crews
15 Conductor Installation = two 10-man crews
16 Guard Structure Removal = one 6-man crew
17 Restoration = one 7-man crew, It is estimated that 2 of the 12 miles will not require restoration efforts based on current access and field conditions.
18 Vault Installation = one 6-man crew
19 Duct Bank Installation = one 6-man crew
20 Install Underground Cable = one 8-man crew
21 Relocate Existing Conductor = one 4-man crew
22 Remove Existing Wood Poles = one 4-man crew
23 Underground Cable Installation = one 4-man crew

Table B-12. Substation Construction Equipment and Workforce Estimates

Primary Equipment Description	Estimated Horsepower (HP)	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production
Boom Truck	300	Diesel	1	2	30	7	N/A
Crew Truck	200	Diesel or Gasoline	3	2	40	2	N/A
Flat Bed	300	Diesel	1	2	40	2	N/A
Lift Truck	200	Gasoline	1	2	30	7	N/A
Tool Trailer	N/A	Electric	1	2	40	8	N/A
Skid Steer	80	Diesel	1	1	15	7	N/A
Backhoe	80	Diesel	1	1	15	7	N/A
Dump Truck	350	Diesel	3	1	15	7	N/A
Water Truck	350	Diesel	1	1	15	7	N/A
Foundation Auger	80	Diesel	1	1	5	7	N/A
Concrete Mixer Truck	350	Diesel	4	1	5	4	N/A

Source: SCE, 2014a (PEA Table 3.10-B)

Table B-13. Telecommunication System Construction Equipment and Workforce Estimates

Primary Equipment Description	Estimated Horsepower (HP)	Probable Fuel Type	Primary Equipment Quantity	Estimated Workforce	Estimated Schedule (Days)	Duration of Use (Hrs/Day)	Estimated Production
Bucket Truck	300	Diesel	2	4	4	8	8
Pick Up Truck	250	Diesel	1	1	4	8	N/A
Van	200	Gasoline	2	2	2	4	8

Source: SCE, 2014a (PEA Table 3.10-C)

Table B-14. Construction Equipment Description

Equipment Type	Use Description
1-Ton Truck, 4x4	Transport workers and material
3/4-Ton Truck, 4x4	Transport workers and material
Arrow Board Trailer	Traffic control sign
Auger Truck	Light/medium duty - dig holes for poles
Backhoe/Front Loader	Medium duty - grades soil, loads dirt into dump trucks
Boom/Crane Truck	Light/medium duty - lifts/places material
Bucket Truck	Lift and transport workers
Bull Wheel Puller	Provides tension on conductor/ground wire during stringing operation
Chipper	Breaks down trees/vegetation after removal
Compressor Trailer	Provides compressed air for pneumatic tools
Concrete Mixer Truck	Delivers and mixes concrete for job site
Crane (L)	Heavy duty - lifts/places material
Crew Truck	Transports workers and materials

Table B-14. Construction Equipment Description	
Equipment Type	**Use Description**
Debris Haul Truck	Hauls removed trees/vegetation
Drum Type Compactor	Compacts soil
Dump Truck	Imports/exports material
Excavator	Excavates and/or moves native soil
Extendable Flat Bed Pole Truck	Hauls poles
Flat Bed Pole Truck	Hauls poles
Flat Bed Truck/Trailer	Hauls material
Lowboy Truck/Trailer	Hauls material
Manlift/Bucket Truck	Lifts and transports workers
Material Handling Truck	Hauls material
Motor Grader	Medium duty - grades terrain
Pick-up Truck	Transport workers and material
Pipe Truck/Trailer	Hauls material
Puller	Pulls conductor/ground wire during stringing operation
Rodder Truck	Cable installation
Reel Truck	Cable and wire hauling
R/T Forklift	Lifts and transports material in rough terrain
Sock Line Puller	Pulls sock line during stringing operation
Static Truck/ Tensioner	Provides tension on conductor/ground wire during stringing operation
Stump Grinder	Grinds down tree stump after tree removal
Track Type Dozer	Heavy duty - grades terrain
Truck, Semi-Tractor	Transports material
Van	Transport workers and material
Water Truck	Wets access roads to mitigate fugitive dust/ improve compaction
Wire Truck/Trailer	Hauls conductor/ground wire to job site, hold conductor/ground wire during stringing operation

Source: SCE, 2014a (PEA Table 3.11)

B.4.12 Energizing Subtransmission Lines

Energizing the new lines is the final step in completing the subtransmission construction. The existing 115-kV circuits: Valley-Auld, Valley-MWD-Stetson, Valley-Auld- Triton, Auld-Moraga #2, and Pauba-Triton; the existing 33-kV circuit: Skinner; and existing 12-kV circuits: Flats, Livermore, Equinox, Sundance, Appaloosa, Keller, Colt, Shetland, Beeler, Shipley, and Argonaut, would be de-energized in order to connect the new 115-kV line segments to the existing system. To reduce the need for electric service interruption, de-energizing and re-energizing the existing lines may occur at night when electrical demand is low.

B.4.13 Construction Schedule

SCE anticipates that construction of the proposed Project would take approximately 16 months, barring any unforeseen Project delays such as inclement weather and/or stoppage necessary to protect biological or cultural resources (see Table B-15). Construction would commence following CPUC approval, final engineering, procurement activities, land rights acquisition, and receipt of all applicable permits. Construction is anticipated to commence after a decision is issued by the CPUC. In order to meet the June 2020 operating date, construction would be required to start in March 2018 and would last through July 2019, followed by cleanup activities through November 2019. The operating date may be accelerated if the regulatory processes can be expedited or SCE can further compress its construction schedule, as necessary.

Table B-15. Proposed Construction Schedule

Project Activity	Approximate Duration (Months)	Approximate Start Date
Permit to Construct	N/A	February 2017
Final Engineering	11	January 2017
Right-of-way/Property Acquisition	8	December 2016
Acquisition of Required Permits	12	March 2017
Substation Construction	6	March 2018
Subtransmission Line Construction	16	June 2018
Telecommunications Construction	3	July 2019
Distribution Construction	3	July 2019
Clean up	3	November 2019
Project Operational	N/A	January 2020

Source: SCE, 2014a (PEA Table 3.12)

Noise-generating construction activities would be conducted generally during daytime hours (6:00 a.m. to 6:00 p.m.), Monday through Saturday (SCE, 2015, Q#3-12). It is not anticipated that construction would occur at night; however, if determined to be required due to emergency (power outage) or safety concerns (such as construction near traffic corridors), lighting would be utilized (SCE, 2014b, Q#2-43). Lights would be oriented and shielded to minimize the effect on any nearby sensitive receptors (SCE, 2014b, Q#2-4).

Construction activities would be conducted or staggered to ensure that noise generated during construction would not exceed local municipal noise regulations (SCE, 2015, Q#3-12). In the event construction activities are anticipated on days or hours outside of what is specified in local ordinances (e.g. if existing lines must be taken out of service for work to be performed safely and the line outage must be taken at night for system reliability reasons, or if construction needs require continuous work), SCE would provide five-day advanced notification, including a general description of the work to be performed, location, and hours of construction anticipated, to the CPUC, the local jurisdiction, and residences within 300 feet of the anticipated work, as well as route all construction traffic away from residences, schools, and recreational facilities to the maximum extent feasible.

B.5 Operation and Maintenance

Ongoing O&M activities are necessary to ensure reliable service, as well as the safety of the utility worker and the general public, as mandated by the CPUC. Furthermore, proposed Project facilities are subject to Federal Energy Regulatory Commission (FERC) jurisdiction, with operational control under the California Independent System Operator (CAISO); O&M would be necessary to ensure compliance with both FERC and CAISO.

The proposed 115-kV subtransmission line would be maintained in a manner consistent with CPUC G.O. 95 and G.O. 128, as applicable. Normal operation of the lines would be controlled remotely through SCE control systems, and manually in the field, as required. All subtransmission and distribution lines would be monitored by SCE personnel or contractors in a manner consistent with CPUC G.O. 165. Inspections would be completed a minimum of once per year via ground observation (i.e., no helicopter use [SCE, 2014b, Q#2-44]), but would usually occur more frequently based on system reliability. Maintenance would occur as needed and may include activities such as:

- repairing conductors,
- washing or replacing insulators,
- repairing or replacing other hardware components,
- replacing poles and towers,
- trimming trees,
- conducting brush and weed control, and
- repairing access roads.

Most regular O&M activities of overhead facilities would be performed from existing access roads with no surface disturbance. However, repairs done to existing facilities could occur in undisturbed areas such as repairing or replacing existing poles and towers, and/or restringing existing conductors to repair damage. Additionally, some pulling site locations may need to be placed in previously undisturbed areas, and at times, conductors may pass through vegetation en route to their destination.

B.5.1 Access Roads

Routine access road maintenance would be conducted on an annual and/or as-needed basis. Road maintenance may include the following activities:

- maintaining a vegetation-free corridor (to facilitate access and for fire prevention);
- conducting blading to smooth over washouts, eroded areas, and washboard surfaces as needed;
- brush trimming or removal of shrubs approximately two to five feet beyond berms or road edges to keep vegetation from intruding into the roadway;
- cleaning ditches;
- moving and establishing berms;
- clearing and making functional drain inlets to culverts;
- repairing culverts;
- clearing and establishing water bars;
- cleaning and repairing over-side drains; and
- repairing, replacing and/or installing storm water diversion devices on an as-needed basis.

B.5.2 Insulator Washing

During O&M, insulators may require periodic washing with water to prevent the buildup of contaminants such as dust, salts, droppings, smog, condensation, etc., as well as to reduce the possibility of electrical arcing, which can result in circuit outages and potential fire. The frequency of insulator washing is region-specific and based on local conditions and build-up of contaminants. Replacement of insulators, hardware, and other components would be performed as needed to maintain circuit reliability. SCE would install polymer insulators, which do not require washing (SCE, 2014b, Q#2-35).

B.5.3 Pole Maintenance

Pole replacements may be necessary during O&M of the proposed Project, where some pole sites and/or laydown areas may be located in previously undisturbed areas. Attempts would be made to utilize previously disturbed areas to the greatest extent possible; however, it is possible that pole replacements may result in new ground or vegetation disturbance. Additionally, in some cases new access may be created to remove and replace an existing pole.

Wood pole testing and treating is also a necessary maintenance activity conducted to evaluate the condition of wood structures both above and below ground level, and to avoid potential contamination concerns associated with the leaching of preservatives used to maximize the structural integrity of wood poles. Intrusive inspections require the temporary removal of soil around the base of the wood pole, usually to a depth of approximately 12 to 18 inches, to check for signs of deterioration. Existing roads and trails would be utilized for pole access. To minimize impacts, all soil removed for these inspections would be reinstalled and compacted once testing is completed.

B.5.4 Conductor Maintenance

Damaged conductor would be removed and restrung. As noted above, some pulling site locations may need to be placed in previously undisturbed areas and at times, conductors may be passed through vegetation en route to their destination.

B.5.4.1 Tree Trimming

Regular tree pruning during O&M would be performed in compliance with existing State and federal laws, rules, and regulations. These activities are crucial for maintaining reliable service, especially during severe weather events or natural disasters. Tree pruning standards for distances from overhead lines have been set by the CPUC (G.O. 95, Rule 35), California Public Resource Code 4293, California Code of Regulations Title 14, Article 4, and other government and regulatory agencies. SCE's standard approach to tree pruning is to remove at least the minimum required by law, plus one years' growth, depending upon the particular species.

B.5.4.2 Fire Prevention

In addition to maintaining vegetation-free access roads, helipads, and clearances around electrical lines, clearance of brush and weeds around poles, and as required by applicable regulations on fee-owned ROWs, is necessary for fire protection. A 10-foot radial clearance around non-exempt poles (as defined by California Code of Regulations Title 14, Article 4) and a 25-50 foot radial clearance around non-exempt transmission structures (as defined by California Code of Regulations Title 14, Article 4) would be maintained in accordance with Public Resource Code 4292.

B.5.4.3 Emergency Repairs

In addition to regular O&M activities, SCE would conduct emergency repairs in response to emergency situations such as damage resulting from high winds, storms, fires, and other natural disasters and accidents. Emergency repairs may include replacement of damaged or downed poles or lines and re-stringing of conductor. Emergency repairs could be needed at any time.

B.5.4.4 Telecommunication

As-needed or emergency maintenance activities associated with telecommunication equipment would include replacing defective circuit boards and damaged radio antennas or feedlines, as well as testing the equipment. Routine inspection and preventative maintenance would include filter change-outs or software and hardware upgrades. Most regular O&M activities of telecommunication equipment would be performed at substation or communication sites, inside the equipment rooms, and therefore would be accessed from existing access roads with no surface disturbance. Access road maintenance would occur as described above for "Access Roads" (see Section B.5.1 above).

The telecommunications cables would be maintained on an as-needed or emergency basis. O&M activities would include patrolling, testing, repairing, and replacing damaged cable and hardware. Most regular maintenance activities of overhead facilities are performed from existing access roads with no surface disturbance. Repairs done to existing facilities, such as repairing or replacing existing cables and re-stringing cables, may need to occur in undisturbed areas. Access and habitat restoration may be required for routine or emergency maintenance activities.

B.6 Electric and Magnetic Fields Management

B.6.1 Electric and Magnetic Fields

Recognizing that there is public interest and concern regarding potential health effects that could result from exposure to electric and magnetic fields (EMF) from power lines, this document provides information regarding EMF associated with electric utility facilities and the potential effects of the proposed Project related to public health and safety.

Potential health effects from exposure to ***electric fields*** from power lines (produced by the existence of an electric charge and directly related to the voltage of the power line) are typically not of concern since electric fields are effectively shielded by materials such as trees and walls. An acknowledged potential impact to public health from electric transmission lines is the hazard of a direct electric shock. This hazard is not due to the electric field in the area surrounding a transmission line, but rather electric shocks from transmission lines are generally the result of accidental or unintentional direct contact by the public with the energized wires.

The majority of the following information, related to EMF focuses primarily on exposure to ***magnetic fields*** (produced by the flow of electrons on a power line and directly related to the current in the power line), however, unlike electric fields, magnetic fields are not easily shielded by objects or materials.

Similar to electric fields, magnetic field strength attenuates rapidly with distance from the source. Magnetic fields can be reduced either by cancellation or by increasing distance from the source. Cancellation is achieved in two ways. A transmission line circuit consists of three "phases"; three separate conductors, usually on an overhead structure. The configuration of these three conductors influences the strength of the magnetic field. When the configuration places the three conductors closer together, the interference, or cancellation, of the fields from each conductor is enhanced, and the magnetic field is reduced. This technique has practical limitations because of the potential for short circuits if the conductors are placed too close together. Close conductor spacing can also create worker safety concerns because there is a risk of workers contacting energized conductors during maintenance.

This EIR does not consider magnetic fields in the context of CEQA and determination of environmental impact. This is because (a) there is no agreement among scientists that EMF does create a potential health risk, and therefore, (b) there are no defined or adopted CEQA standards for defining health risk from EMF. As a result, EMF information is presented for the benefit of the public and decision makers.

After several decades of study regarding potential public health risks from exposure to power line EMF, research results remain inconclusive. Several national and international panels have conducted reviews of data from multiple studies and state that there is not sufficient evidence to conclude that EMF causes cancer. The International Agency for Research on Cancer, an agency of the World Health Organization (WHO), and the California Department of Health Services (DHS) both classified EMF as a possible carcinogen (WHO, 2001; DHS, 2002).

In addition, the 2007 WHO [Environmental Health Criteria (EHC) 238] report concluded that:

- Evidence for a link between Extremely Low Frequency (ELF, 50–60 Hz) magnetic fields and health risks is based on epidemiological studies demonstrating a consistent pattern of increased risk for childhood leukemia. However, "…virtually all of the laboratory evidence and the mechanistic evidence fail to support a relationship between low-level ELF magnetic fields and changes in biological function or disease status.…the evidence is not strong enough to be considered causal but sufficiently strong to remain a concern."
- "For other diseases, there is inadequate or no evidence of health effects at low exposure levels."

Currently, there are no applicable national standards or California regulations related to EMF levels from power lines or substations. However, following a CPUC decision from 1993 (Decision [D.]93-11-013) that was reaffirmed by the CPUC on January 27, 2006 (D.06-01-042), the CPUC requires utilities to incorporate "low-cost" or "no-cost" measures to mitigate EMF from new or upgraded electrical utility facilities up to approximately 4 percent of total project cost. To comply with this requirement, SCE developed and included a Field Management Plan (FMP) as part of the application for the proposed Project to reduce magnetic field levels in the vicinity of the transmission line.

B.6.2 EMF in the Proposed Project Area

Magnetic field strength is a function of both the electric current carried by the wires, and the configuration and design of the three conductors that together form a single circuit of an electric transmission line. Exposure to EMF occurs in the community from sources other than electric transmission lines. Research on ambient magnetic fields in homes indicates that levels below 0.6 mG (milligauss) could be found in half of the studied homes in the centers of rooms, and that the average levels in the homes away from electrical appliances was 0.9 mG. Immediately adjacent to appliances (within 12 inches), field values are much higher, for example: 4 to 8 mG near electric ovens and ranges, 20 mG for portable heaters, or 60 mG for vacuum cleaners (NIEHS, 2002). Outside of the home, the public also experiences EMF exposure from the electric distribution system that is located throughout all areas of the community. Existing EMF levels along SCE's existing 115 kV corridor are indicated in Table B-16 (Magnetic Field Levels along Existing 115 kV Transmission Corridor) and are discussed in greater detail in SCE's Field Management Plan (Appendix F of SCE's application; SCE, 2014c). Figure B-9

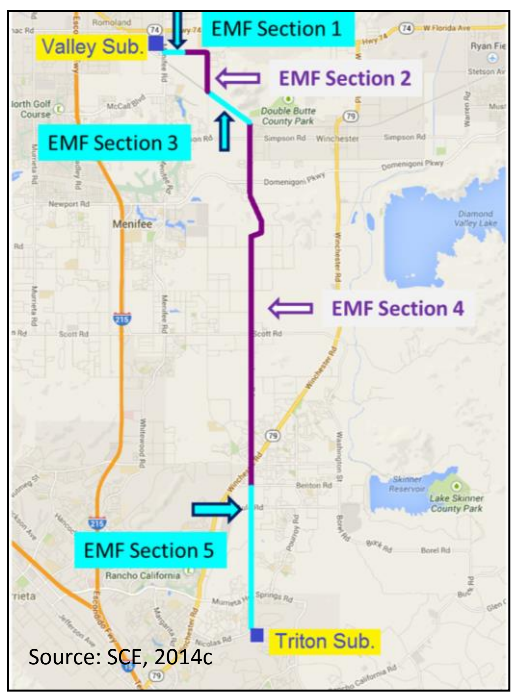

Figure B-9. Proposed Subtransmission Line Route EMF Evaluation Sections

identifies the location of the EMF evaluation sections. These calculated EMF levels were based on forecasted peak loading condition and a set of assumptions. They were used to compare various design options and are not meant to be indicators of actual levels because magnetic field levels vary with time of the day, season of the year, and operating conditions.

Table B-16. Magnetic Field Levels along Existing 115 kV Transmission Corridor

Segment	Edge of ROW (mG)	Edge of ROW (mG)
Section 1	22	11.6
Section 2	52	55
Section 3	38.1	37.8
Section 4	0	0
Section 5	25.2	29.5

Source: SCE, 2014c (Appendix F: Field Management Plan)

B.6.3 Field Management Plan for the Proposed Project

This section discusses SCE's general practices regarding EMF and the specific EMF reduction measures proposed by SCE for the proposed Project. SCE's Field Management Plan includes design calculations of estimated EMF levels for the proposed 115 kV lines with and without implementation of EMF reduction measures. These design calculations are shown in Table B-17. SCE's application (Appendix F) includes additional details on SCE's assumptions and calculated magnetic field levels for the proposed Project (SCE, 2014c).

Table B-17. Calculated Magnetic Field Levels along Proposed 115 kV Transmission Corridor

Segment	Proposed without EMF Reduction: Edge of ROW (mG)	Proposed with EMF Reduction: Edge of ROW (mG)	Proposed without EMF Reduction: Edge of ROW (mG)	Proposed with EMF Reduction: Edge of ROW (mG)
Section 1	28.8	24.8	14.7	8.5
Section 2	15.6	15.6	14.8	14.8
Section 3	11.0	11.0	13.6	13.6
Section 4	30.5	30.5	29.5	29.5
Section 5	13.2	13.2	15.7	15.7

Source: SCE, 2014c (Appendix F: Field Management Plan)

* The proposed Project with EMF reduction calculations indicate underground construction on Section 1 and for Sections 2 through5 the use of double circuit construction that reduces conductor spacing between circuits and arrangement of phase.

SCE's EMF Design Guidelines. In accordance with Section X (A) of CPUC G.O. 131-D, Decision No. D.06-01-042, and SCE's EMF Design Guidelines prepared in accordance with the EMF Decision, SCE will incorporate "no cost" and "low cost" magnetic field reduction steps in the design of the proposed transmission line.

SCE's guidelines call for implementation of measures to reduce magnetic fields based on the land uses surrounding each project, in the following priority:

- Schools, day care centers, hospitals
- Residential properties
- Commercial/industrial land uses
- Recreational sites
- Agricultural lands
- Undeveloped land

The options in SCE's EMF Design Guidelines include the following measures, any or all of which may be selected to reduce the magnetic field strength levels from the proposed transmission line:

- Arranging the conductors in a triangular configuration to maximize field cancellation.
- Placing the conductors for the transmission line in the right-of-way at the greatest distance from buildings housing priority land uses to reduce magnetic field exposure along the entire route, except where the location of existing utilities prevent strategic line placement.
- Moving the conductors further from the edge of the right-of-way near high priority groups including school, day care, hospital and residential land uses.

Proposed EMF Reduction Measures. The Field Management Plan for the proposed Project (SCE, 2014c) includes each of these measures, as "no cost" and "low cost" magnetic field reduction steps:

- Utilize underground subtransmission construction for engineering reasons. Section 1 only.
- Arrange underground cables of proposed subtransmission line for magnetic field reduction. Section 1 only.
- Utilize subtransmission structure heights that meet or exceed SCE's preferred EMF design criteria. Sections 2, 3, 4 and 5.
- Utilize subtransmission line construction that reduces spacing between circuits as compared with other designs. Section 4 only.
- Utilize double-circuit construction that reduces spacing between circuits as compared with single-circuit construction. Sections 2, 3 and 5.
- Arrange conductors of subtransmission lines for magnetic field reduction. Sections 2, 3 and 5.

If the preliminary engineering design is significantly modified or an alternative is approved by the CPUC, SCE would prepare and submit to the CPUC an Addendum to the Field Management Plan.

Additional information regarding EMF and the proposed Project can be found in Appendix F of SCE's PTC application (SCE, 2014c). SCE's PTC application and PEA are available for public review at the CPUC Energy Division CEQA Unit and on the project website at:

http://www.cpuc.ca.gov/environment/info/aspen/valleysouth/valleysouth.htm

B.7 Applicant Proposed Measures

SCE proposes to implement measures to ensure the proposed Project would occur with minimal environmental impacts in a manner consistent with applicable rules and regulations. SCE proposes to implement these measures during the design, construction, and operation of the proposed Project.

Applicant Proposed Measures (APMs) are listed in Table B-18, by environmental issue area, and are considered part of the proposed Project. SCE has also identified additional measures and preconstruction surveys, which are described below the table.

Table B-18. Applicant Proposed Measures (APMs)

APM Number	Issue Area
	Air Quality
APM AIR-1	Construction crew vehicle speeds on non-public unpaved roadways would be restricted to 15 miles per hour.
APM AIR-2	Dust suppression would be implemented on all active nonpublic unpaved access roadways (e.g. using water or chemical suppressant).
APM AIR-3	Off-road diesel construction equipment with a rating between 100 and 750 horsepower would be required to use engines compliant with U.S. Environmental Protection Agency Tier 3 non-road engine standards. In the event a Tier 3 engine is not available, that engine would be equipped with a Tier 2 engine and documentation would be provided from a local rental company stating that the rental company does not currently have the required diesel-fueled off-road construction equipment or that the vehicle is specialized and is not available to rent. Similarly, if a Tier 2 engine is not available, that engine would be equipped with a Tier 1 engine and documentation would be provided.
	Biology
APM BIO-1	**Preconstruction Survey and Construction Monitoring** – Preconstruction biological clearance surveys shall be performed at specific construction and other work sites where potential biological resources are located to minimize impacts on special status wildlife and plant species. If special status species are present, biological monitors shall be on-site, as needed, and shall aid crews in implementing avoidance measures during construction. Special status species observations and avoidance measures will be reported to the appropriate wildlife agencies prior to construction in that area. In addition, appropriate agencies will be provided a monthly report summarizing all special status species observations and avoidance measures.
APM BIO-2	**Nesting Bird Preconstruction Surveys** – SCE would conduct preconstruction clearance surveys no more than 7 days prior to construction to determine the location of nesting birds and territories. Nesting survey results and avoidance measures, if applicable, will be reported to the appropriate wildlife agencies prior to construction in that area. An avian biologist would establish a buffer area around active nest(s) and would monitor construction activities. The buffer would be established based on construction activities, potential noise disturbance levels, and behavior of the species. A monthly report summarizing all active nest observations and avoidance measures will be provided to the appropriate agencies on a monthly basis, during the nesting season, or until all active nests have been determined to be inactive.
APM BIO-3	**Nesting Bird Management Plan** – SCE shall develop a Nesting Bird Management Plan with input from CDFW. The plan shall include (1) nest management and avoidance; (2) field approach (survey methodology, reporting, and monitoring), including information related to areas of occupied habitat for coastal California gnatcatcher; and (3) avian biologist qualifications. Avian biologist(s) shall be subject to review and approval by CDFW, and shall be responsible for determining the buffer area around active nest(s). Biological monitors shall monitor nests and construction activities.
APM BIO-4	**Avian Safe Design** – The 115-kV subtransmission structures would be designed consistent with the Suggested Practices for Avian Protection on Power Lines: the State of the Art in 2006 (APLIC, 2006).
APM BIO-5	**Stephens' Kangaroo Rat and Los Angeles Pocket Mouse Mitigation and Avoidance** – An SCE qualified biologist shall conduct preconstruction surveys (see APM BIO-1) in suitable habitat for Stephens' kangaroo rat and Los Angeles pocket mouse at specific work areas along the proposed Project and alternative Project for impact avoidance and minimization. To address impacts to Stephens' kangaroo rat, within the boundaries of the Stephens' Kangaroo Rat HCP, SCE shall apply to participate in the plan through an agreement with the Riverside County Habitat Conservation Agency (Riverside County, 1996). To address impacts to Los Angeles pocket mouse, within the boundaries of the Western Riverside County Multiple Species Habitat Conservation Plan (WRCMSHCP) Area, SCE shall apply to participate in the WRCMSHCP and shall follow provisions of the WRCMSHCP as they apply to this species. Stephens' kangaroo rat and Los Angeles pocket mouse observations and avoidance measures will be reported to the appropriate wildlife agencies prior to construction in that area. In addition, appropriate agencies will be provided a monthly report summarizing all special status species observations and avoidance measures.

Table B-18. Applicant Proposed Measures (APMs)

APM Number	Issue Area
APM BIO-6	**Burrowing Owl Preconstruction Surveys and Monitoring** – A preconstruction non-protocol burrowing owl survey shall be conducted no more than 30 days prior to commencement of ground-disturbing activities within suitable habitat to determine if any occupied burrows are present. SCE would establish a buffer area around active nest(s) and would monitor construction activities. If occupied burrows or other evidence of presence are found, adequate buffers shall be established around burrows. Adequate buffers shall be 160 feet from occupied wintering burrows (December 1 through January 31) and 250 feet from occupied breeding burrows during the breeding season (February 1 through August 31). A qualified avian specialist may increase or reduce these buffer distances on a case-by-case basis. Biologists shall monitor all construction activities that have the potential to impact active burrows. In addition, potential unavoidable impacts to burrowing owl and its habitat shall be mitigated by participation in the WRCMSHCP. SCE's participation, as a PSE, shall include following the provisions and measures outlined in the WRCMSHCP. All reporting requirements would be conducted as described in APMs BIO-1 and BIO-2.
APM BIO-7	**Coastal California Gnatcatcher Impact Minimization and Mitigation** – Avoidance of active nests shall be accomplished through APMs BIO-2 and BIO-3, described above. In areas of occupied habitat for the coastal California gnatcatcher, a buffer area around active nest(s) would be established by the SCE biologist and provided to USFWS and CDFW for concurrence. The buffer would be established based on construction activities, potential noise disturbance levels, and behavior of the species. Construction activities in occupied habitat/suitable habitat for the coastal California gnatcatcher will be monitored by a qualified biologist. SCE shall apply to participate in the WRCMSHCP and shall follow provisions of the WRCMSHCP as they apply to coastal California gnatcatcher. Where proposed Project design allows, SCE shall avoid or minimize impacts to Diegan and coastal sage scrub vegetation. All reporting requirements would be conducted as described in APMs BIO-1 and BIO-2.
APM BIO-8	**Listed Riparian Birds Impact Minimization** – Based on current design, SCE shall avoid direct construction impacts to riparian and other wetland habitats suitable for listed riparian bird species (least Bell's vireo, southwestern willow flycatcher). Avoidance of active nests shall be accomplished through APMs BIO-2 and BIO-3, described above. All reporting requirements would be conducted as described in APMs BIO-1 and BIO-2.
APM BIO-9	**Quino Checkerspot Butterfly Impact Minimization and Mitigation** – To address impacts to Quino checkerspot butterfly, within the boundaries of the WRCMSHCP Plan Area, SCE shall apply to participate in the WRCMSHCP and shall follow the provisions of the WRCMSHCP as they apply to this species. All reporting requirements would be conducted as described in APMs BIO-1 and BIO-2.
APM BIO-10	**Vernal Pool Resources** – A qualified biologist shall conduct preconstruction marking of previously mapped basins suitable to support vernal pool species within the potential proposed Project Impact Corridor and depict them on construction plans with specifications for avoidance. Facts about the vernal pool habitat and potential impacts from construction and O&M activities shall be included in the WEAP materials. Wet season protocol level surveys for special status vernal pool resources will be conducted prior to construction. If special status species are detected, SCE shall follow the provisions of the WRCMSHCP as they apply to these species. All reporting requirements would be conducted as described in APMs BIO-1 and BIO-2.
	Cultural Resources
APM CUL-1	Impacts to sensitive paleontological resources would be reduced with implementation of a Paleontological Resources Management Plan.
	Traffic and Transportation
APM TRA-1	Traffic control or other management plans would be prepared where necessary to minimize proposed Project impacts on local streets, highways (State Route [SR]74 and SR-79), freeways, or other forms of transportation (Class I and Class II bicycle routes).
APM TRA-2	Where the proposed Project work area encroaches on a public ROW and reduces the existing pedestrian path of travel to less than 48 inches wide, alternate pedestrian routing would be provided during construction activities.

Source: SCE, 2014a (PEA Table 3.13)

B.7.1 Environmental Surveys

SCE completed biological and cultural/paleontological resources studies for the proposed Project. These studies have been considered and referenced in the evaluation of the proposed Project in both Section C.5 (Biological Resources) and Section C.6 (Cultural and Paleontological Resources).

Based on the biological resources surveys, SCE identified additional focused surveys that would be conducted within thirty days prior to the start of ground-disturbing activity. These surveys are identified below:

- **Clearance Surveys**. A clearance survey would be conducted no more than 30 days prior to the start of construction in a particular area to identify potential plant and animal species that may be impacted. Clearance surveys include a field survey by a qualified botanist and wildlife biologist, and would be limited to areas directly impacted by construction activities.
- **Active Nests.** Work near nesting habitat would be scheduled to take place outside the nesting season, when feasible. Within one week of the start of construction in a particular area during nesting season (generally February 1 to August 31), a qualified wildlife biologist would conduct a pre-construction focused nesting survey. If occupied nests are present, SCE biologists would determine appropriate nesting buffers based on a Project-specific nesting bird management plan or consultation with the appropriate agencies.

The preconstruction surveys would identify and/or address any potential sensitive biological resources that may be impacted by the proposed Project, including the subtransmission line route, access roads, construction work areas, and staging yards. Where feasible, information gathered from these surveys would be used by SCE to finalize the Project design in order to avoid sensitive resources, or minimize potential impacts to sensitive resources from Project-related activities. The results of these surveys may also help to determine the extent to which environmental specialist/construction monitors would be required.

B.7.2 Worker Environmental Awareness

A Worker Environmental Awareness Plan (WEAP) would be developed prior to construction. SCE would prepare a presentation and use it to train all site personnel prior to the commencement of work. A record of all trained personnel would be kept. In addition to instruction on compliance with all APMs and Project mitigation measures, including any developed after the pre-construction surveys, all construction personnel would also receive the following:

- A list of phone numbers of SCE environmental specialist personnel associated with the proposed Project (archaeologist, biologist, environmental coordinator, and regional spill response coordinator);
- Instruction on SCAQMD fugitive dust rules;
- A description of applicable noise construction time and/or noise level limits;
- A review of applicable local, State and federal ordinances, laws, and regulations pertaining to historic and paleontological preservation; a discussion of disciplinary and other actions that could be taken against persons violating historic and paleontological preservation laws and SCE policies; a review of paleontology, archaeology, history, prehistory and Native American cultures associated with historical and paleontological resources in the Project vicinity, inclusive of instruction on what typical cultural and paleontological resources look like; and instruction that if discovered during construction, work is to be suspended in the vicinity of any find and the site foreman and SCE Project Archaeologist or environmental compliance coordinator is to be contacted for further direction;
- Instruction on the roles of environmental monitors (e.g., biological, cultural, paleontological), and the appropriate treatment by on-site personnel of areas designated as Environmentally Sensitive Areas (ESAs).

- Instruction on the importance of maintaining the construction site, including use of trash containers to ensure all food scraps, wrappers, food containers, cans, bottles, and other trash are deposited in closed trash containers, and timely disposal of trash to avoid overfill of containers;
- Instruction on individual responsibilities under the Clean Water Act, the Project SWPPP, site-specific BMPs, and the location of Safety Data Sheets;
- Instructions to notify the foreman and regional spill response coordinator in case of a hazardous materials spill or leak from equipment, or upon the discovery of soil or groundwater contamination;
- Instructions to cover all holes/trenches at the end of each day;
- A copy of the truck routes to be used for material delivery; and
- Instruction that noncompliance with any laws, rules, regulations, APMs, or mitigation measures could result in being barred from participating in remaining construction activities.

B.7.3 Traffic Control

Construction activities completed within public street ROW would require the use of a traffic control service. Traffic control services would be conducted in accordance with applicable requirements. These traffic control measures would be consistent with those published in the California Joint Utility Traffic Control Manual (CJUTCC, 2010).